# DINOSAURS!

•DISCOVER THE GIANTS REHISTORIC WORLD•

## 25

UK £1.50 SOR
Republic of Ireland IR£1.50
Australia $3.75; Malta 75c
New Zealand $4.75 inc. GST
South Africa R6.75 inc. VAT
R6.14 (excl. Tax – other countries)
Singapore $4.50; Malaysia $5.[illegible]

ORBIS
DE AGOSTINI
—GROUP—

AN ORBIS PLAY & LEARN COLLECTION

# DINOSAURS!

DISCOVER THE GIANTS OF THE PREHISTORIC WORLD

## IDENTIKIT

Three more fascinating dinosaurs

PSITTACOSAURUS 577

CERATOSAURUS 580

YAVERLANDIA 581

## DINOSAUR WORLD

DEEP FROZEN DINOSAURS 582

## SPOTTER'S GUIDE

Sharpen your eyesight, spot some

SKELETONS 590

## TIME DETECTIVE

Are you an eggspert? Find out in

THE EGG-EATERS 592

Discover which dinosaurs were

STEALING TO EAT 594

## HISTORY IN PICTURES

A great dinosaur discovery in South America – what was the DAWN THIEF 596

## A to Z

From the last of the Ks – *Kangnasaurus*, to the first of the Ls – *Labocania* 600

## ASK THE EXPERT

Our dinosaur expert answers your questions BACK COVER

## PLUS

## GIANTS OF THE PAST

In a woodland glade three *Psittacosaurus* feed quietly among the birches and magnolias 586

## 3-D Gallery

Put on your specs and watch a *Diplodocus* family go for a stroll in astonishing 3D 588

## DINO Fact File

Are you a dinosaur encyclopedia yet? Improve your knowledge by answering the questions and knowing the facts 598

## HOW TO CONTINUE YOUR COLLECTION

**Most people collect their issues by placing a regular order with their newsagent. You can, however, also obtain your copies directly in the following ways:**

### UK and REPUBLIC OF IRELAND

**Subscriptions:**
Phone 0424 755755 for information (Mon-Fri, 9am-5pm).

**Back issues:**
If you miss any issues of DINOSAURS!, these can be ordered through your newsagent. Alternatively, you can order back issues by phoning 0424 755755 (Mon-Fri, 9am-5pm). Credit card orders accepted. Or write to:
Back Issues Department, DINOSAURS!,
PO Box 1, Hastings, TN35 4TJ.
Back issue charges: Issue 1: 30p. All other issues: £1.50. Postage and packing: 50p per copy. When ordering, please enclose:

1. Your name, address and postcode.
2. The issue number(s) and number of copies of each issue you require.
3. Your payment. This can be by postal order or cheque made payable to Orbis Publishing Ltd. You can calculate the amount based on the charges shown above.

**Binders:**

**UK**
DINOSAURS! binders are now available. Each binder holds 13 issues and costs just £4.95 (including £1 p&p).
You can order binders direct from:
DINOSAURS!, PO Box 1, Hastings, TN35 4TJ.
Please enclose payment for £4.95 for each binder. You can pay by cheque or postal order made payable to Orbis Publishing Limited, or phone 0424 755755. Telephone credit card orders are accepted.

**Republic of Ireland**
Binders are available through your newsagent, priced at £4.95.

### AUSTRALIA

**Back issues:** Write to:
Gordon & Gotch Ltd, P.O. Box 290, Burwood, Victoria 3125. Please enclose your payment of the cover price plus $1 per issue p&h.
**Binders:** Details will be published in future issues. Or you can write to: DINOSAURS! Binders, Bissett Magazine Service Pty Ltd, MC Box 460, Eastern Mail Centre, Victoria 33110.

### NEW ZEALAND

**Back issues:** Write for details to: Gordon & Gotch Ltd, P.O. Box 584, Auckland.
**Binders:** Details will be published in future issues. Or you can write for details to the address above.

### MALTA

**Back issues:** These can be ordered through your newsagent.
**Binders:** Write for details to:
Miller (Malta) Ltd, Valetta.

### SOUTH AFRICA

**Back issues:** Telephone 011 402 3816 for details. Or write to: Back Issues Department, Republican News Agency, PO Box 16034, Doornfontein, 2028. Please enclose your payment of the cover price plus 2 Rand per issue p&h.
**Binders:** These can be obtained at the shop where you bought this magazine.

### SINGAPORE, MALAYSIA

**Back issues and binders:**
These can be obtained at the shop where you bought this magazine.

**DINOSAURS! is published by**
**Orbis Publishing Ltd**
**Griffin House**
**161 Hammersmith Rd**
**London W6 8SD**

**© 1993 Orbis Publishing**

**N25 93 09 23**

**Printed in Italy by Officine Grafiche De Agostini, Novara**

# PSITTACOSAURUS

***Psittacosaurus* was an unusual, horned dinosaur. It had a curved beak like a parrot.**

*Psittacosaurus* was about as long as a sheep. When it stood on two legs, it was almost as tall as a man. Scientists believe it was a member of the horned dinosaur family, the ceratopians, like *Protoceratops*.

## PARROT BEAK

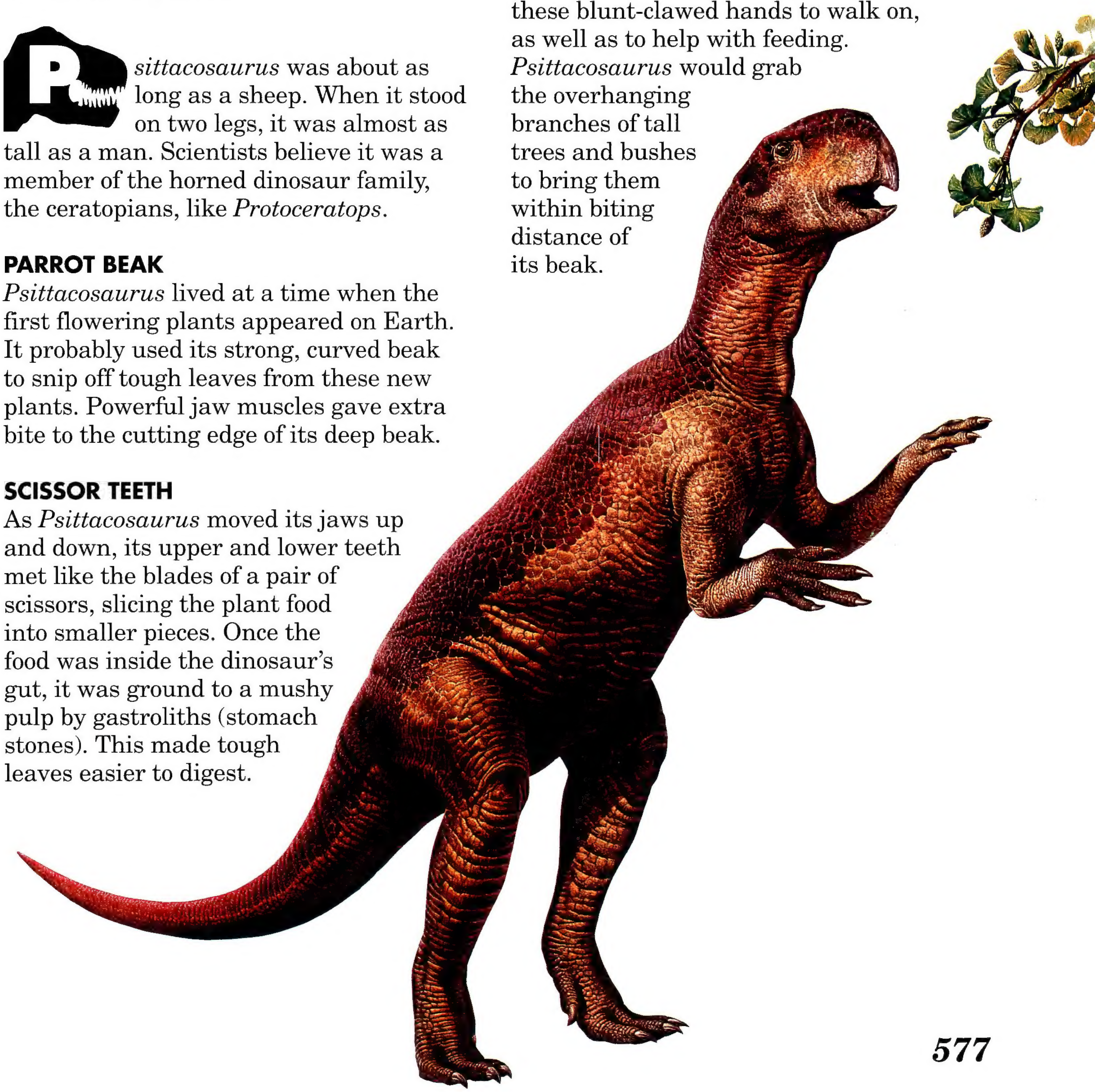
*Psittacosaurus* lived at a time when the first flowering plants appeared on Earth. It probably used its strong, curved beak to snip off tough leaves from these new plants. Powerful jaw muscles gave extra bite to the cutting edge of its deep beak.

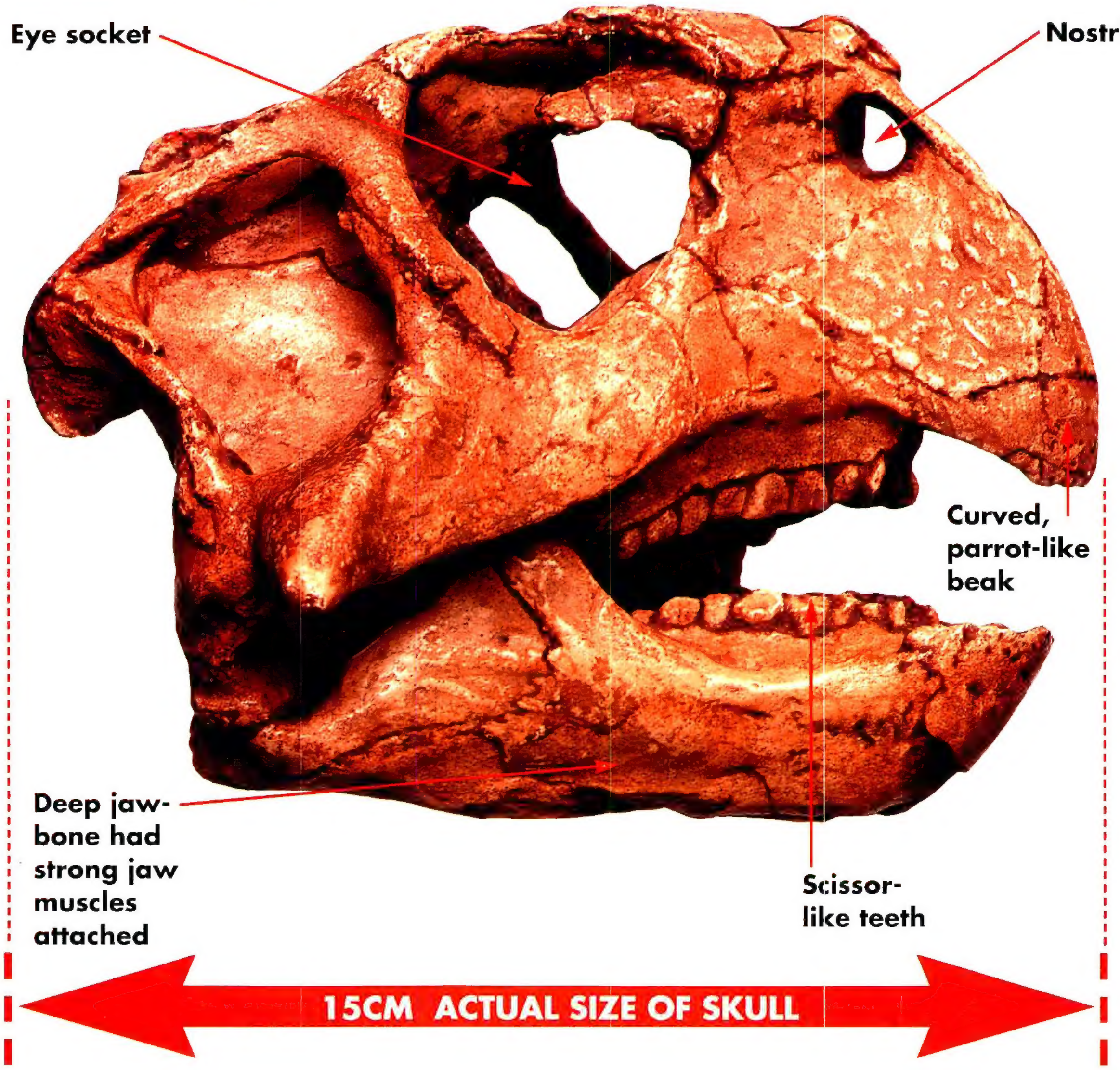
## SCISSOR TEETH

As *Psittacosaurus* moved its jaws up and down, its upper and lower teeth met like the blades of a pair of scissors, slicing the plant food into smaller pieces. Once the food was inside the dinosaur's gut, it was ground to a mushy pulp by gastroliths (stomach stones). This made tough leaves easier to digest.

## GRASPING HANDS

*Psittacosaurus* had flexible hands, each with four long fingers. It probably used these blunt-clawed hands to walk on, as well as to help with feeding. *Psittacosaurus* would grab the overhanging branches of tall trees and bushes to bring them within biting distance of its beak.



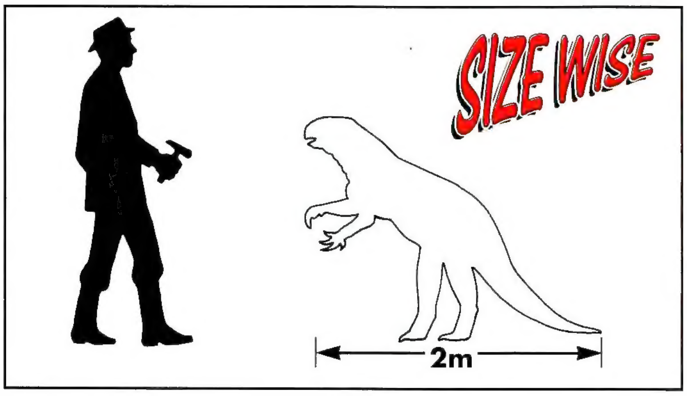

Eye socket
Nostril
Curved, parrot-like beak
Deep jaw-bone had strong jaw muscles attached
Scissor-like teeth
15CM ACTUAL SIZE OF SKULL

### LATE DISCOVERY

The remains of *Psittacosaurus* were found in the 1920s by an American expedition to Mongolia. About 60 years later a scientist noticed some tiny fossils in the collection. They were tiny skulls, smaller than the palm of your hand.

### BABY DINOSAURS

They were the fossil skulls of several baby *Psittacosaurus.* Their bodies were only as long as a kitten's. They had big eyes and their spines were not fully formed. This shows that they were quite newly hatched.



## MONSTER FACTS

- **NAME:** *Psittacosaurus* (si-tak-oh-saw-rus) means 'parrot reptile'
- **SIZE:** up to 2m long
- **FOOD:** plants
- **LIVED:** about 100 million years ago in the Cretaceous Period in Mongolia

**Like this hyacinth macaw, *Psittacosaurus* had a strong, curved beak with a very sharp bite.**

### GOOD PARENTS

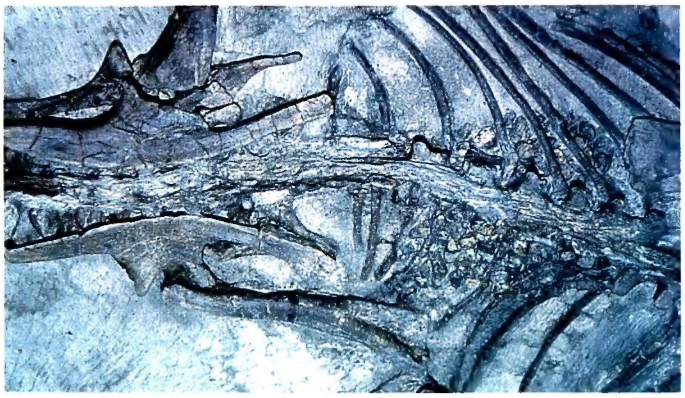
Strangely, the baby dinosaurs' teeth showed signs of wear, so they must have chewed some fairly tough plants. It is possible that the parents brought food to the nest for their hatchlings until they were big enough to look after themselves.

### ON TWO LEGS

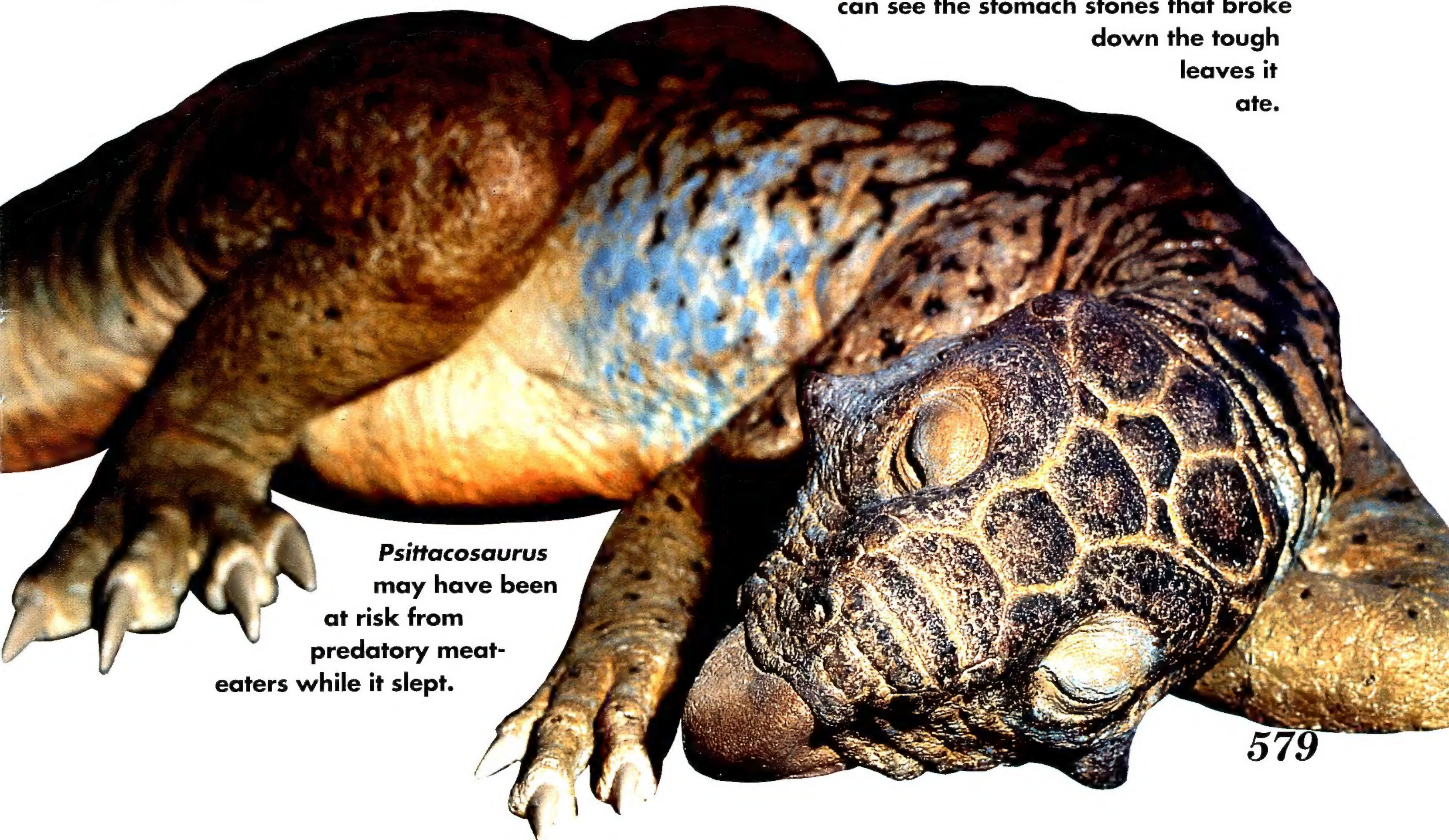
*Psittacosaurus* could walk on two or four legs. When a predator such as *Velociraptor* appeared, the plant-eater relied on speed and agility. Unlike other horned dinosaurs, *Psittacosaurus* probably ran off on its powerful back legs. Its long tail balanced the front part of the body as it made its speedy escape.

## What is ? A GASTROLITH

Gastroliths are the 'stomach stones' that some dinosaurs swallowed on purpose. These lay in a special part of the dinosaur's gut which was like the gizzard of a modern bird. The stones swirled around with the plant food, mashing it into a soupy pulp. One specimen of *Psittacosaurus* was found to have more than 100 small pebbles lying where its stomach would have been.



**Under *Psittacosaurus'* ribs (above) you can see the stomach stones that broke down the tough leaves it ate.**

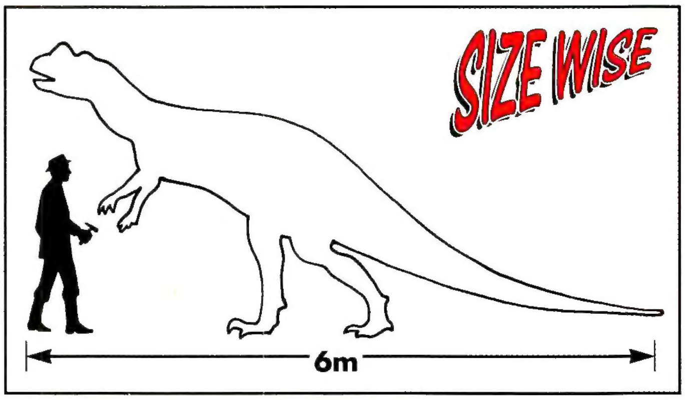


***Psittacosaurus* may have been at risk from predatory meat-eaters while it slept.**

# CERATOSAURUS

**Ceratosaurus was as long as two rhinoceroses and as tall as the crossbar of a soccer goal.**

*Ceratosaurus* lived at the same time as *Allosaurus*. Although it was only about half its size, *Ceratosaurus* was a dangerous predator.



### NOSE BLADE

At the top of *Ceratosaurus'* large head was a raised bony horn. It stood above the dinosaur's snout like a blunt lump. Males may have used it as a weapon when they fought each other for a female.

### CURVED TEETH

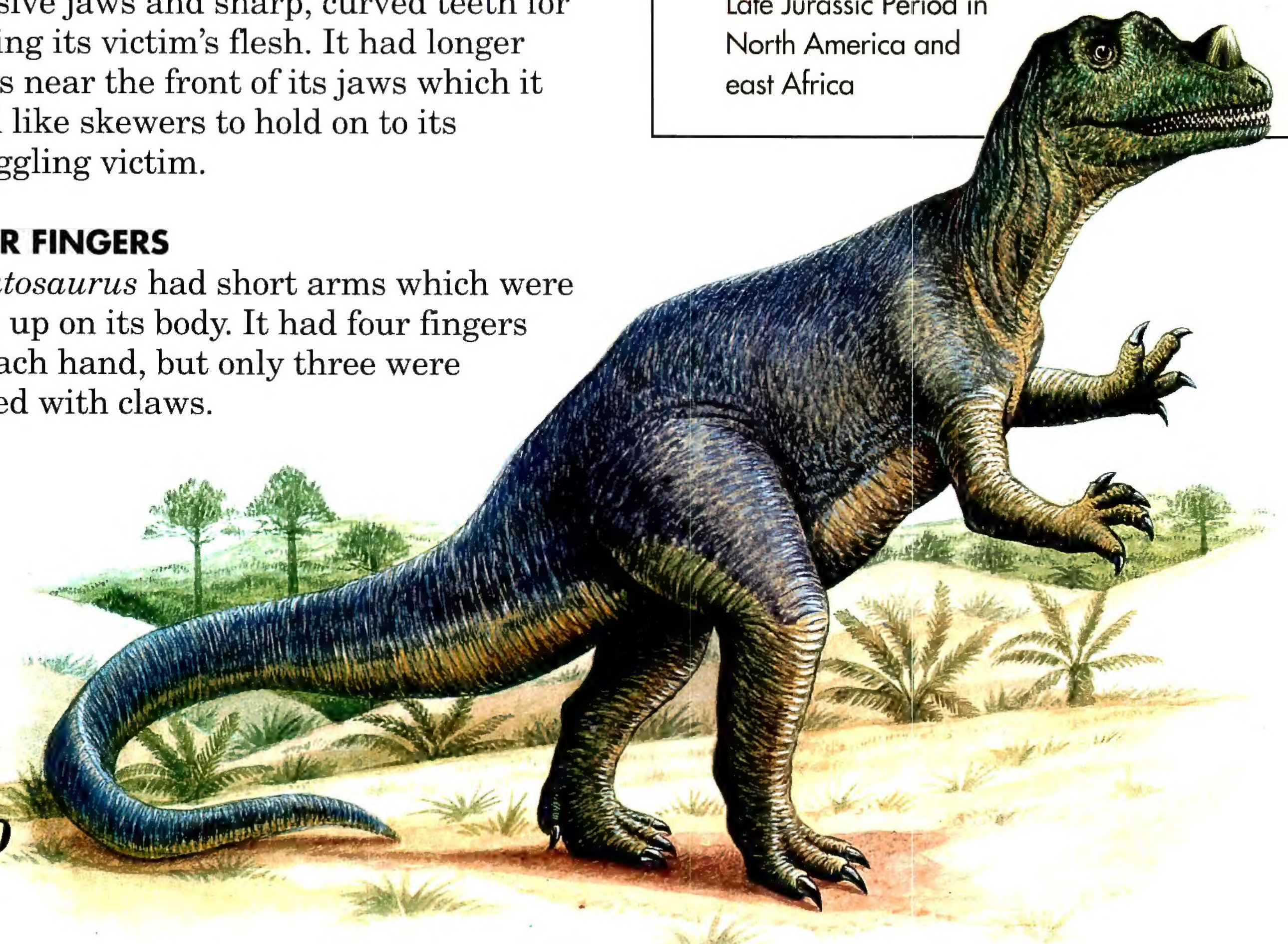
Like many carnosaurs, *Ceratosaurus* had massive jaws and sharp, curved teeth for tearing its victim's flesh. It had longer fangs near the front of its jaws which it used like skewers to hold on to its struggling victim.

### FOUR FINGERS

*Ceratosaurus* had short arms which were high up on its body. It had four fingers on each hand, but only three were tipped with claws.

## MONSTER FACTS

- **NAME:** *Ceratosaurus* (ser-a-toe-saw-rus) means 'horned reptile'
- **SIZE:** up to 6m long and 2m high
- **FOOD:** meat
- **LIVED:** about 160 million years ago in the Late Jurassic Period in North America and east Africa



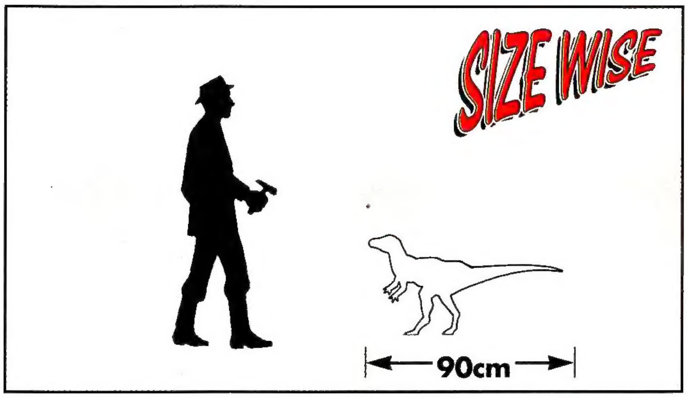
# YAVERLANDIA

**Little *Yaverlandia* is, so far, the earliest known pachycephalosaur.**

Everything we know about this dinosaur is based on a tiny fragment of skull. It had two areas of thick bone at the top of its head which looked like round bumps, so scientists believe that it was probably a pachycephalosaur.

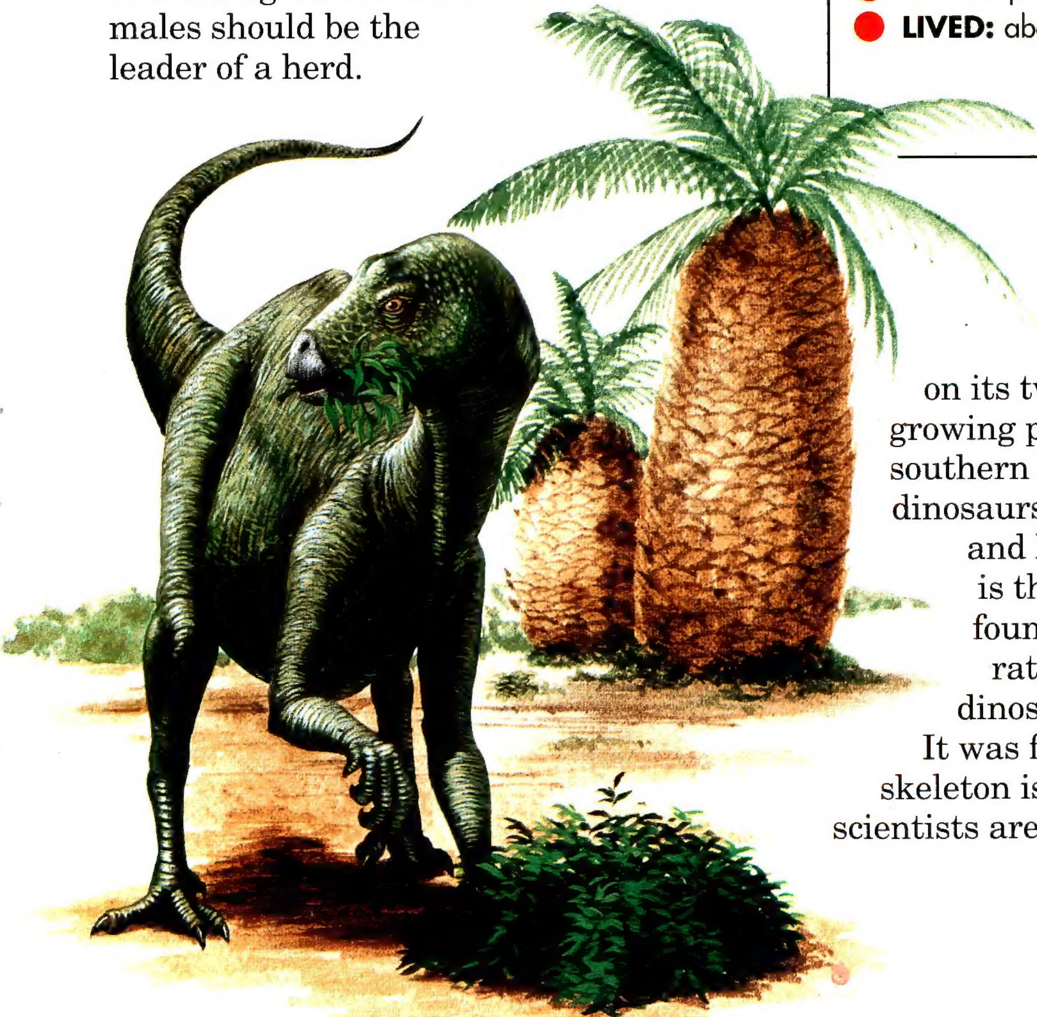
## HEAD PUSHER

*Yaverlandia* was one of the low-domed pachycephalosaurs. These dinosaurs used their flat, thick skulls in amazing head-to-head pushing contests. It was their way of deciding which of the males should be the leader of a herd.



## MONSTER FACTS

- **NAME:** *Yaverlandia* (yav-er-land-ia) means 'from Yaverland Point'
- **SIZE:** about 90cm long
- **FOOD:** plants
- **LIVED:** about 115 million years ago in the Early Cretaceous Period in the Isle of Wight, southern England



## EUROPEAN THICK-HEAD

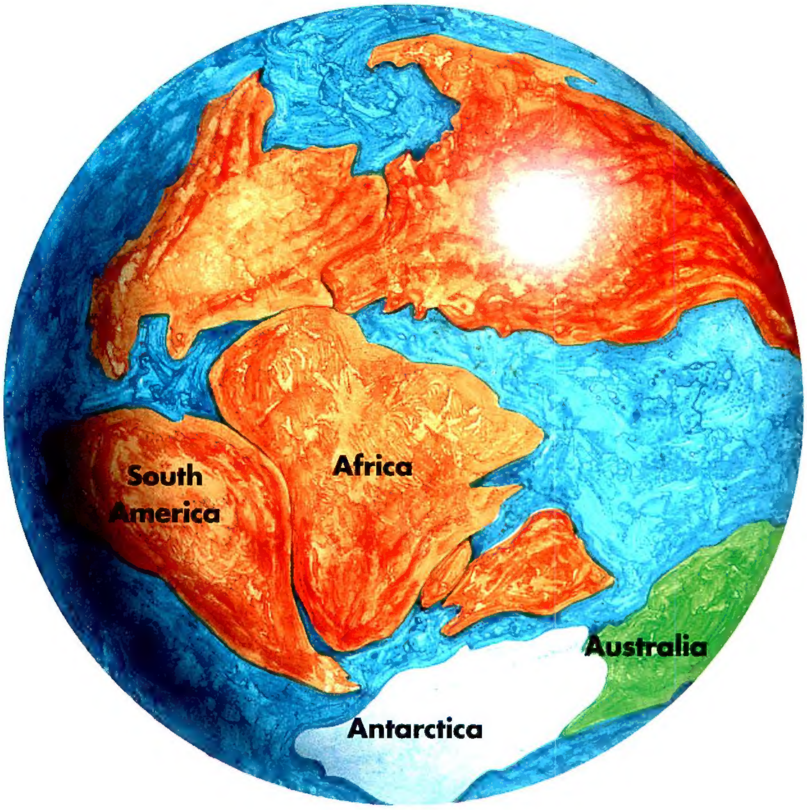
*Yaverlandia* was not much longer than a full-sized tennis racket. It walked on its two long legs and fed on low-growing plants on the damp plains of southern England. Most thick-headed dinosaurs have been found in China and North America. *Yaverlandia* is the only one to have been found in Europe, apart from the rather mysterious skeleton of a dinosaur known as *Stenopelix*. It was found in Germany, but the skeleton is in bad condition and scientists are still puzzling over it.

# Deep-frozen dinosaurs?

**Nothing can survive the freezing temperatures at the South Pole today. But it may have been a very different story millions of years ago...**

Can you imagine any animal living inside a deep-freezer? That's how cold it gets at the South Pole, on the great land mass of Antarctica. No creatures or plants can survive at the South Pole today. But 140 million years ago, dinosaurs may have walked across the South Pole itself, where now there is nothing but endless snow and ice.

**At the beginning of the Age of the Dinosaurs most of the continents were joined together (below). By the end of the Cretaceous period (right), Antarctica and Australia were still joined.**

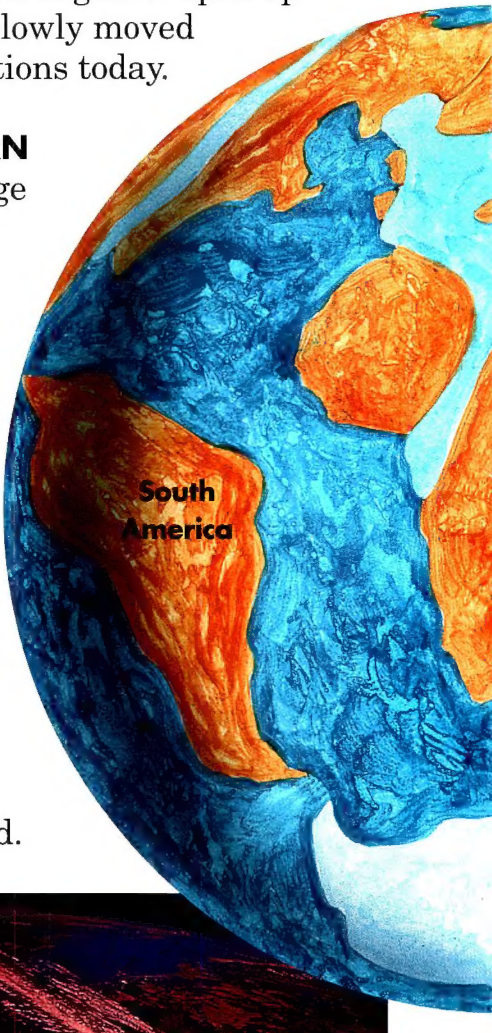


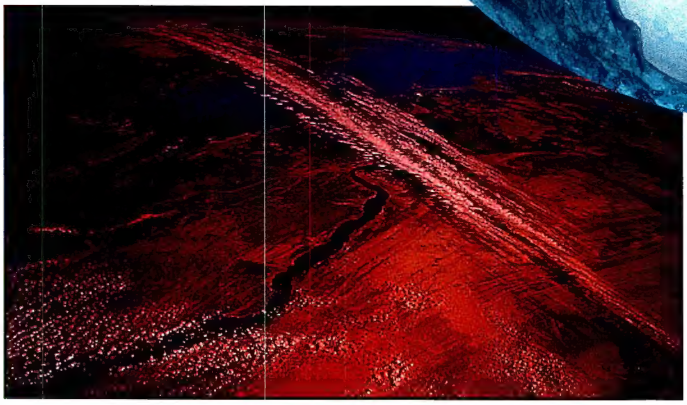
## WANDERING THE WORLD

When dinosaurs ruled the land, the continents were not where they are today. Before the Age of the Dinosaurs, all the continents were joined together, in the super-continent of Pangaea. By the end of the Triassic this had begun to split up as the continents slowly moved towards their positions today.

## NOT SO SOUTHERN

For a time, the huge land mass of Antarctica was next to the east coast of Africa. It was also joined to Australia. On the world map Australia was further south than it is today. Antarctica was further north – not in the cold climate of the South Pole, at the bottom of the world.





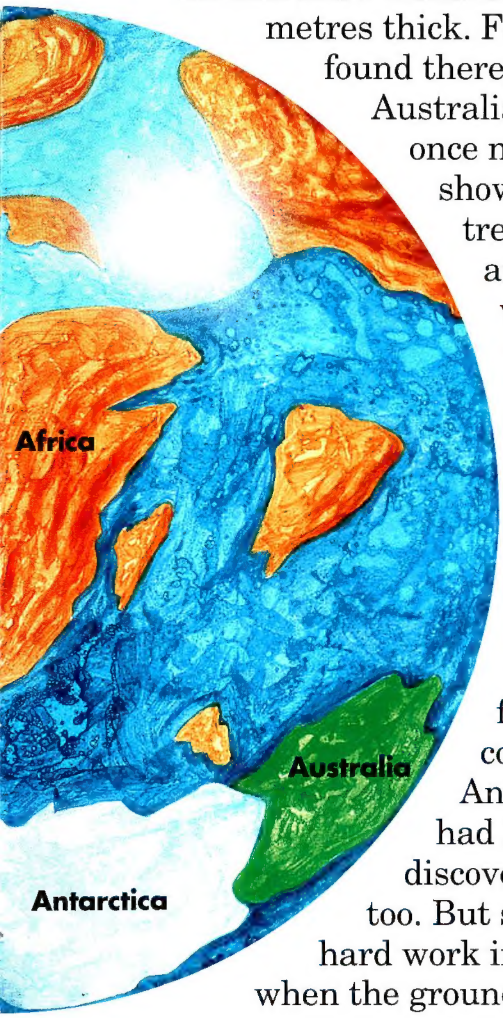
**The Red Sea seen from space (above) shows that parts of the Earth are still moving apart today.**

### AND NOT SO COLD

The climate at that time was generally warmer all over the world. Huge areas of open sea flowed round the world, spreading the Sun's warmth.

### FOSSIL FINDS

So, in dinosaur times, Antarctica was not covered with ice and snow hundreds of metres thick. Fossils have been found there, and in southern Australia – which was once next door. They show that numerous trees, plants and animals thrived. It was even warm enough for creatures such as dinosaurs.



### GREAT EXPECTATIONS

By the late 1980s, dinosaur fossils had been found on every continent except Antarctica. Experts had long expected to discover them there, too. But searching is hard work in snow and ice, when the ground is frozen.

### FAMOUS FIND

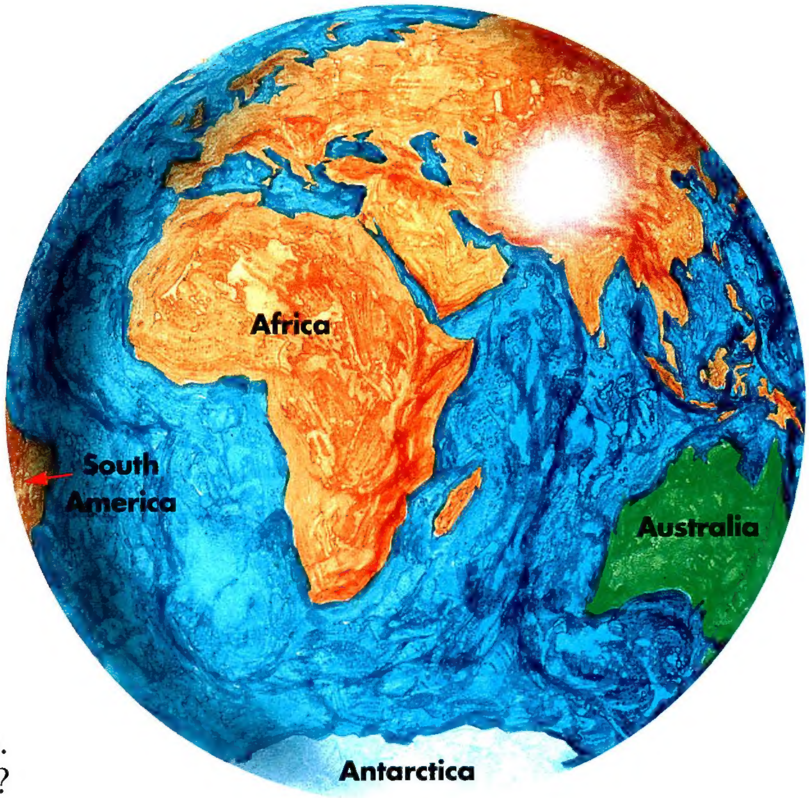
In 1989 the reward came. Jerry Hooker, from London's Natural History Museum, was working with the British Antarctic Survey when he found part of a fossilized skeleton. It seemed to be a two-legged, plant-eating dinosaur from the Cretaceous. How had this dinosaur lived in Antarctica?

**Jerry Hooker (left) piecing together fragments of the first Antarctic dinosaur fossils, which he found in 1989.**

### MIGRATE OR HIBERNATE?

In the Cretaceous, the Antarctic winter was not so severe as it is today. But it was still quite cold, with freezing temperatures, and long winter nights. Perhaps the dinosaur was migrating to a warmer place to find food, as animals do today. Or perhaps it was hibernating. When it is very cold and there is little food around, many creatures today hibernate. They go into a deep winter sleep which lasts until spring arrives.

**In today's world (below), Antarctica and Australia are separated by a wide ocean.**



### NEXT BEST THING

The search for fossils continues on Antarctica. Great finds have also been made at the south-east tip of Australia, near Melbourne, at a place called Dinosaur Cove. One hundred million years ago the ancient rocks here were joined to Antarctica by a valley. So it is almost the same as dinosaur-hunting on Antarctica itself, but a lot warmer and easier!

### SPRING MELTING

In the Age of the Dinosaurs, Dinosaur Cove was almost within the Antarctic Circle. In spring, melting ice and snow washed animal remains into valleys. They were buried and became fossils. Experts from Australian universities have found more than 150 different types of fossil. They think the average temperature may have been as high as 10°C, compared with -80°C in some places on Antarctica today!

**Lichens (above) are plants which grow today in places where few other plants can survive. This one is clinging to an Antarctic rock.**

### What is? HIBERNATION

When temperatures are low and food is scarce, some mammals, such as dormice, have a deep winter sleep called hibernation. Their bodies go cold, and their heartbeat and breathing are very slow. Reptiles also slow down in cold weather, when their bodies are too cool to move quickly. When it is really cold, these creatures cannot move at all. This is sometimes called hibernation, but a more accurate name is torpor.

### POLAR PLANTS

The fossils show that many plants thrived here, and probably on Antarctica too, just a valley away. The preserved trunks of trees have growth rings in the wood which show that the climate was warm enough for them to grow for part of the year. During the warm season the landscape was green and lush with plants such as ferns, ginkgos, cycads and a few flowers.

### ANIMAL LIFE

Among the plants lived many kinds of insects and lizards. Birds and pterosaurs flew in the air. Plesiosaurs, amphibians, turtles and fish swam in the rivers and lakes. What about dinosaurs? Small plant-eaters, which looked like two-legged *Hypsilophodon,* and the horned dinosaurs, fed on plants. Swift ostrich-dinosaurs caught insects and small animals. All these creatures were chased by larger meat-eating dinosaurs that looked like *Allosaurus* and *Megalosaurus*.

## HOW DID THEY SURVIVE?

The fossils show that these animals and plants survived the cold and dark for weeks. Without light, plants stop growing. Most of the animals probably became inactive, as there was little to eat. They may have slept away the winter in caves.

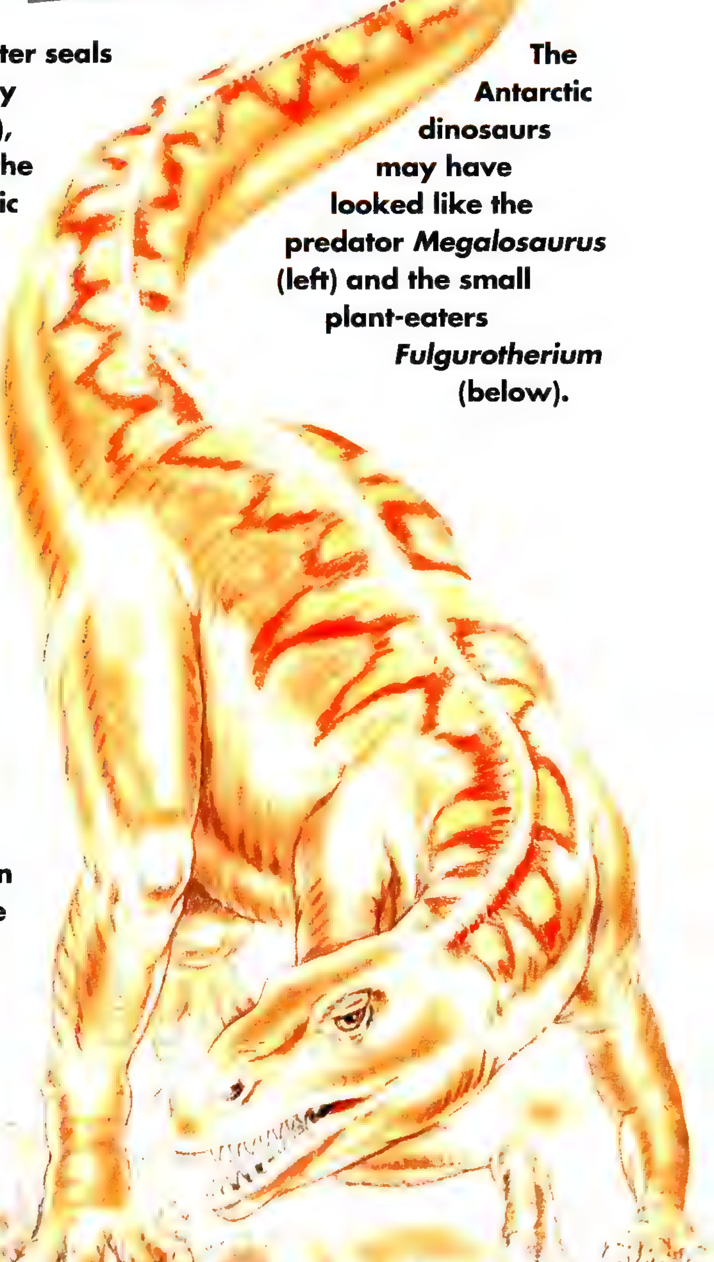
## BIG EYES

An amazing find shows that perhaps some dinosaurs may have been able to see in the dark. It's a fossil of the brain of a small, two-legged dinosaur. The brain has very large optic lobes, which are the parts that deal with seeing.

## THE TWILIGHT ZONE

Perhaps this dinosaur plant-eater, named *Leaellynasaura*, used its keen eyes to search for food in the dim winter days. It may have eaten fallen leaves, or plant roots. Body fat stored in the summer may have helped it to keep going. These fossils are very recent. Experts are still deciding what the dinosaurs looked like. But we now know that dinosaurs lived on every continent, including Antarctica.

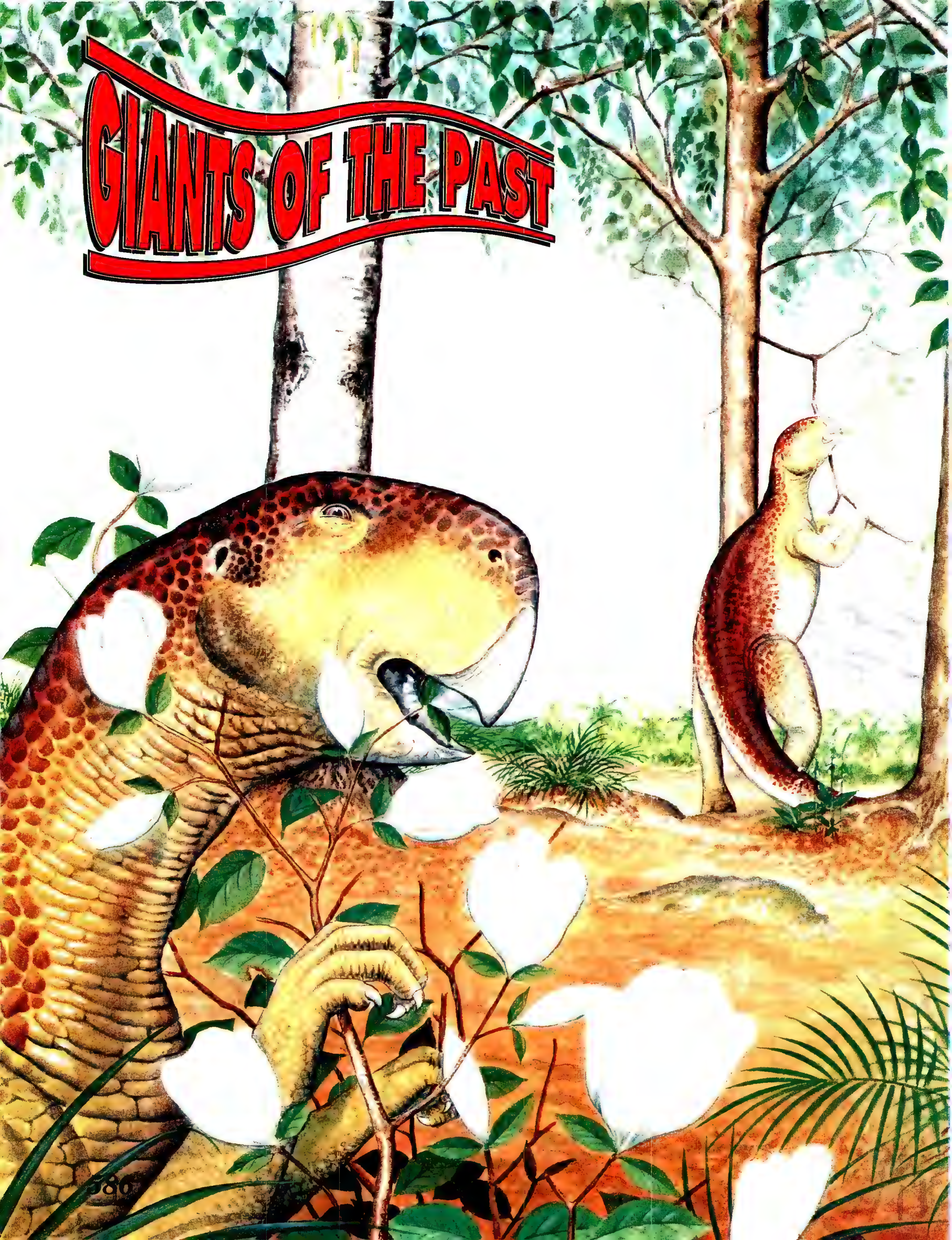
**Crabeater seals of today (above), live in the Antarctic on the ice and in the sea.**



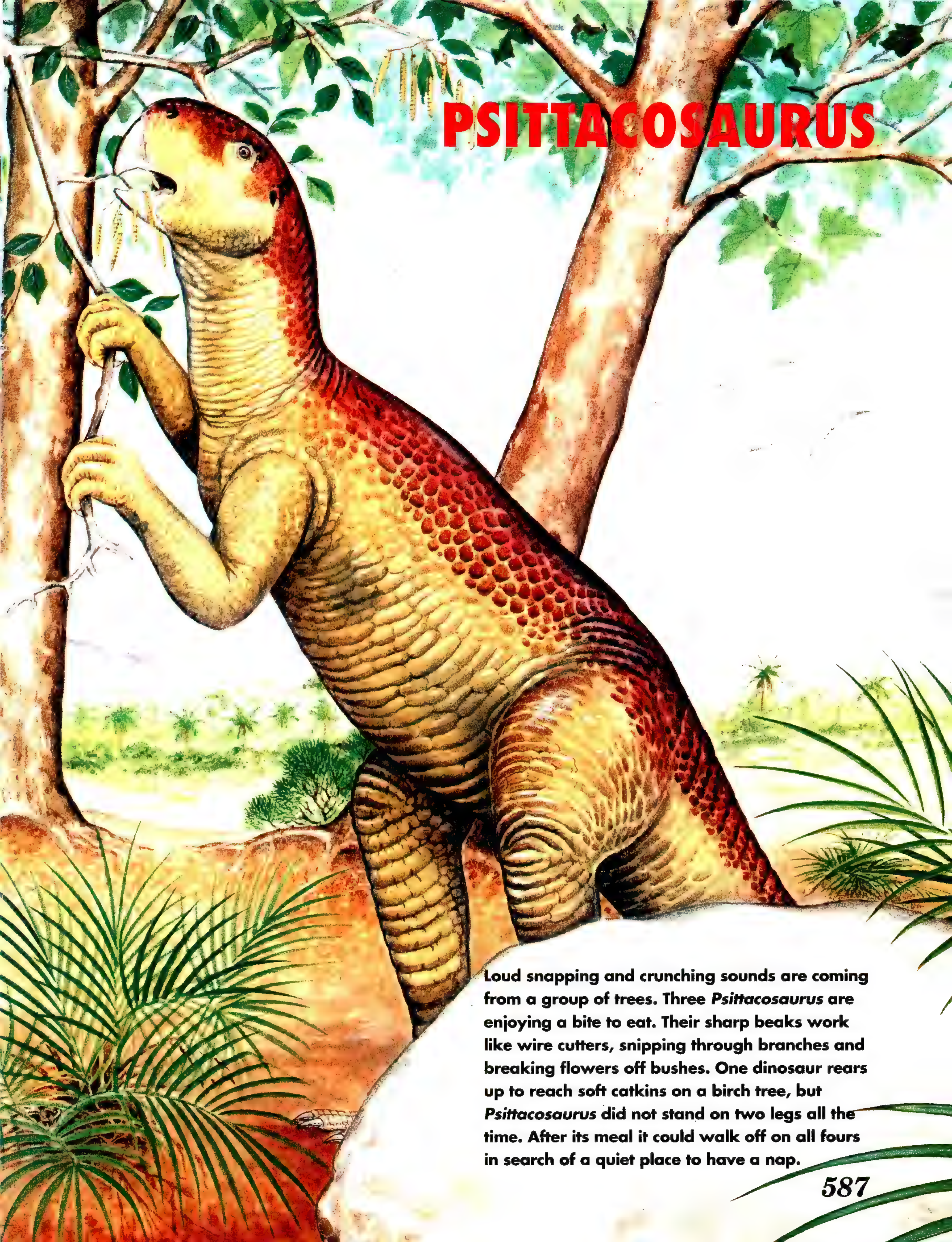
**The Antarctic dinosaurs may have looked like the predator *Megalosaurus* (left) and the small plant-eaters *Fulgurotherium* (below).**

**The animals that live in the Antarctic today are well-protected against the cold, like these Adelie penguins (left).**

# GIANTS OF THE PAST



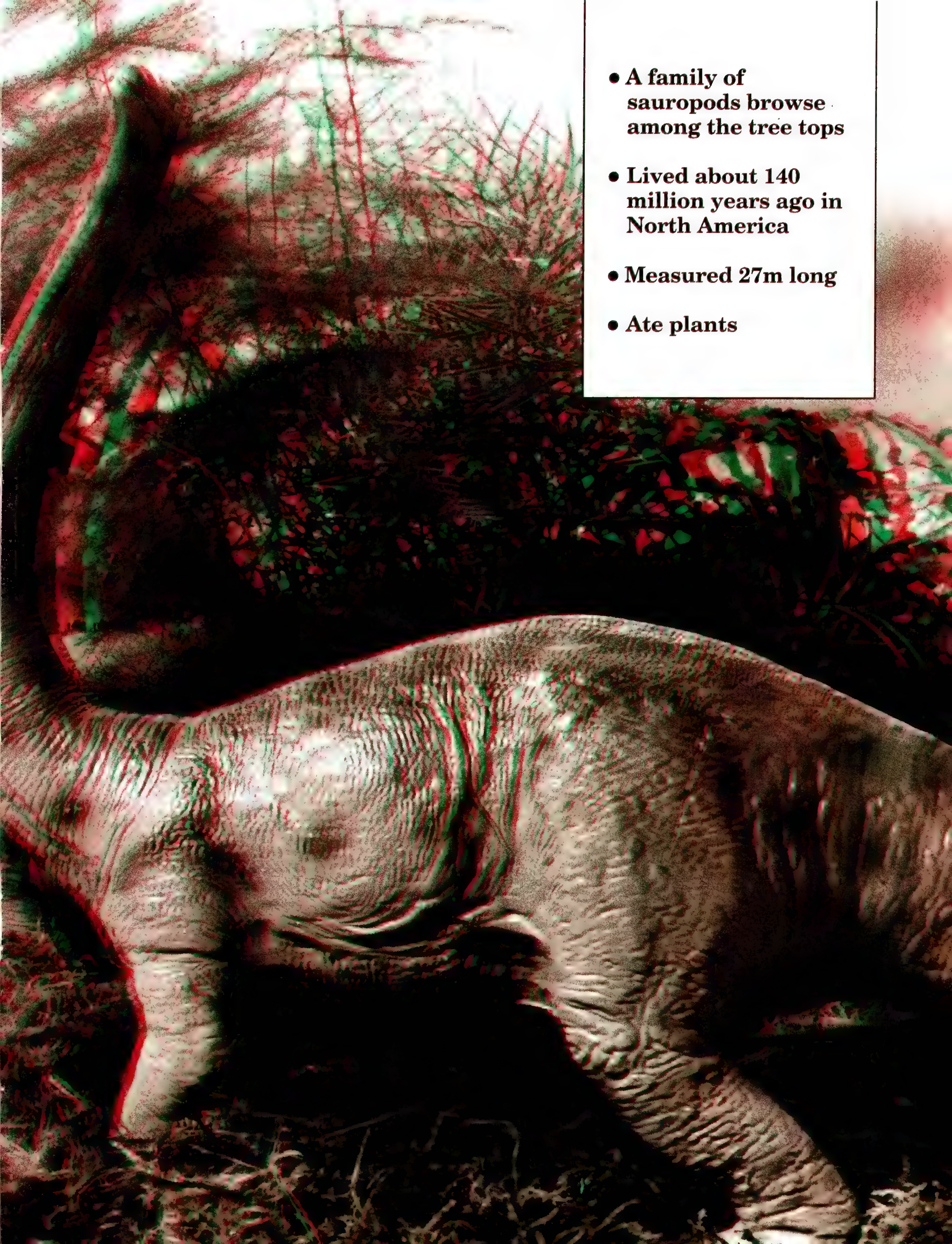
# PSITTACOSAURUS



Loud snapping and crunching sounds are coming from a group of trees. Three *Psittacosaurus* are enjoying a bite to eat. Their sharp beaks work like wire cutters, snipping through branches and breaking flowers off bushes. One dinosaur rears up to reach soft catkins on a birch tree, but *Psittacosaurus* did not stand on two legs all the time. After its meal it could walk off on all fours in search of a quiet place to have a nap.

# 3-D Gallery 34

## DIPLODOCUS FAMILY



- A family of sauropods browse among the tree tops
- Lived about 140 million years ago in North America
- Measured 27m long
- Ate plants

# Skeletons

**You can tell a lot about a dinosaur just by looking at its skeleton.**

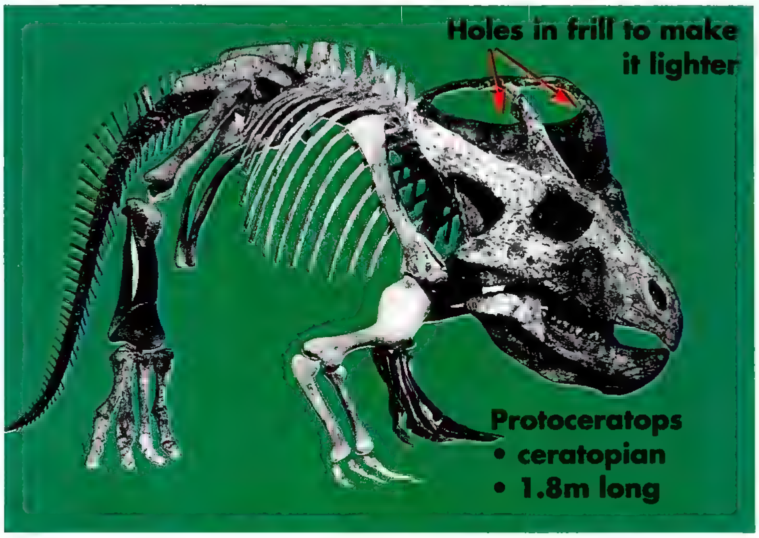
The bones of a dinosaur tell us if it walked on two legs or four, if it ate meat or not and sometimes to which family it belonged.

## BONY SCAFFOLDING

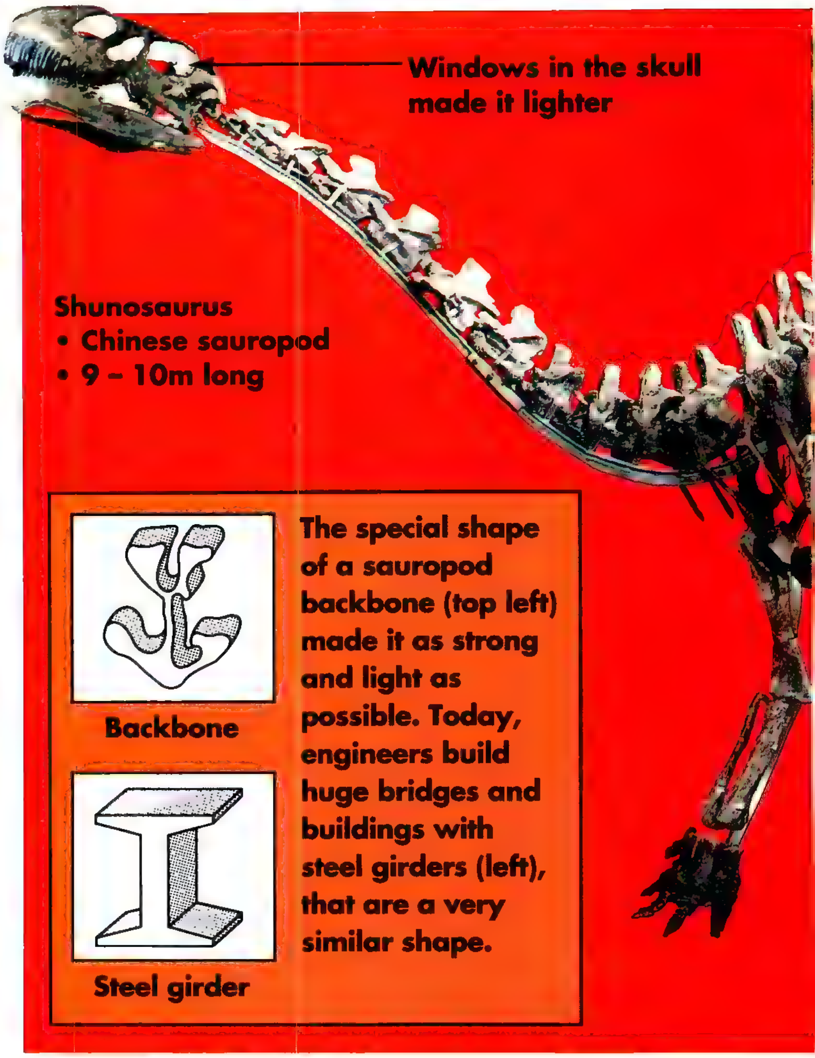
You have a skeleton, and so did dinosaurs. Without a skeleton a body would be a pile of skin and muscle. A skeleton gives a body shape and makes it strong. A skeleton also protects vital soft parts of the body, such as the gut, heart, lungs, liver and brain.

## MOVING THE BONES

Without a skeleton dinosaurs could not have moved. A dinosaur's muscles were attached to the bones of its skeleton. This allowed a dinosaur to walk, run, stretch, lie down or eat. Some dinosaurs had holes called windows in their skulls to make them lighter and easier to move. Large meat-eaters, for example, could tug and twist meat from the bone when feeding.

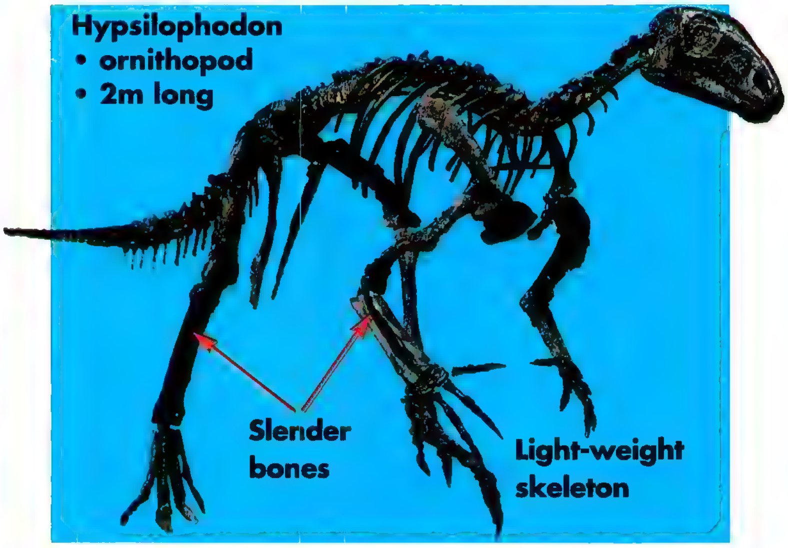


**Protoceratops**
- ceratopian
- 1.8m long



**Shunosaurus**
- Chinese sauropod
- 9 – 10m long

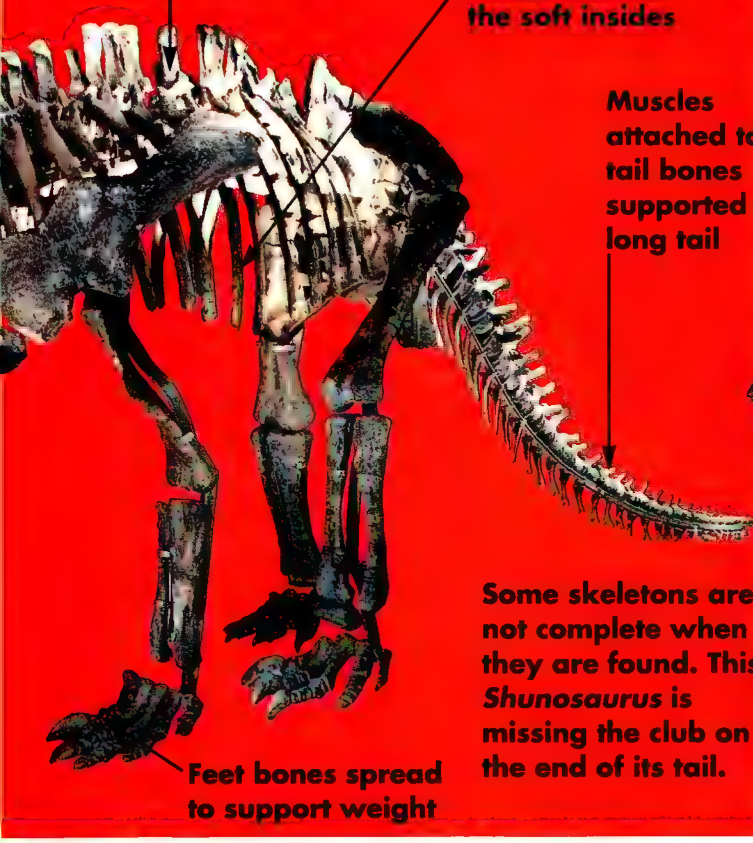
The special shape of a sauropod backbone (top left) made it as strong and light as possible. Today, engineers build huge bridges and buildings with steel girders (left), that are a very similar shape.



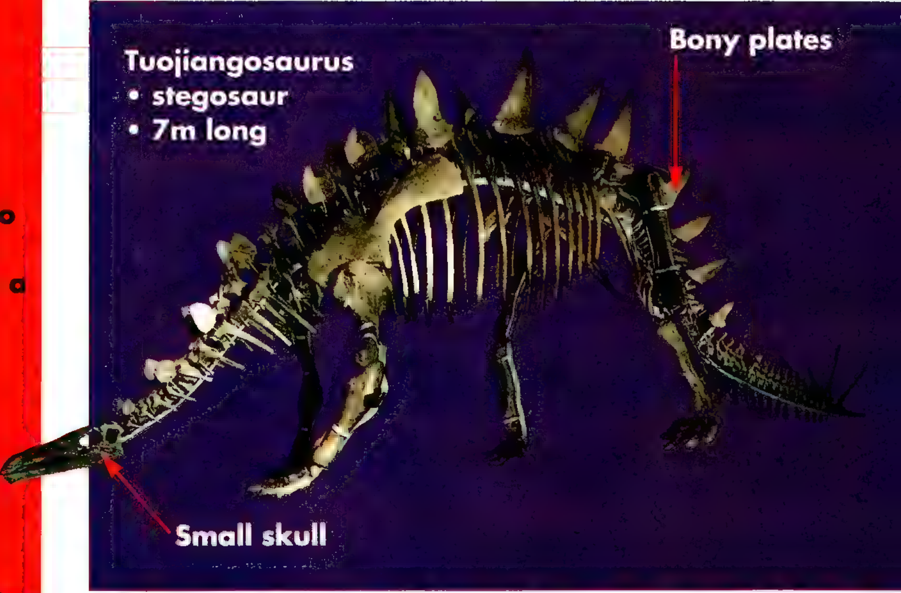
**Hypsilophodon**
- ornithopod
- 2m long

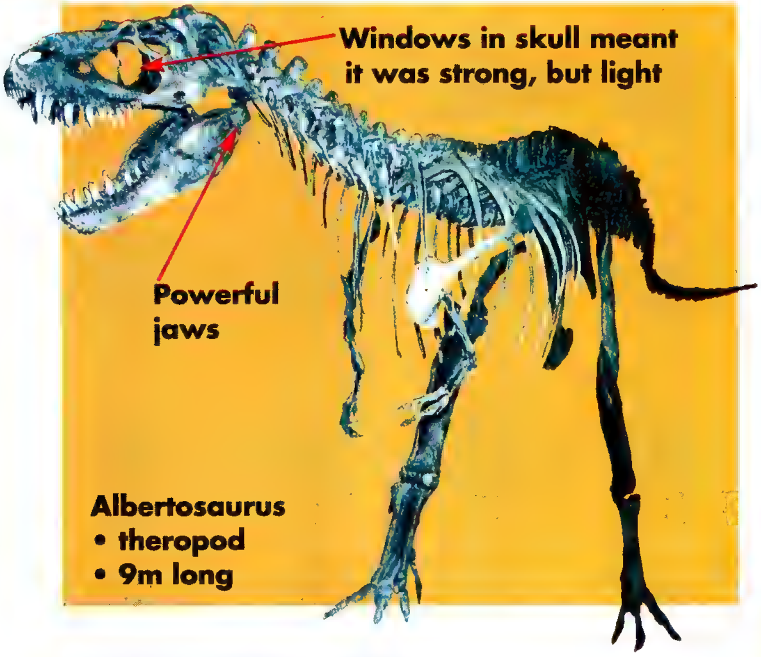
## LIGHT AND LIVELY

Small dinosaurs, which needed to move fast to get away from danger or catch fast-moving prey like insects, had light bones. The ostrich dinosaurs had light bones too, which made them very fast runners.


Backbones designed to be as light and as strong as possible
Ribs protected the soft insides
Muscles attached to tail bones supported a long tail
Feet bones spread to support weight

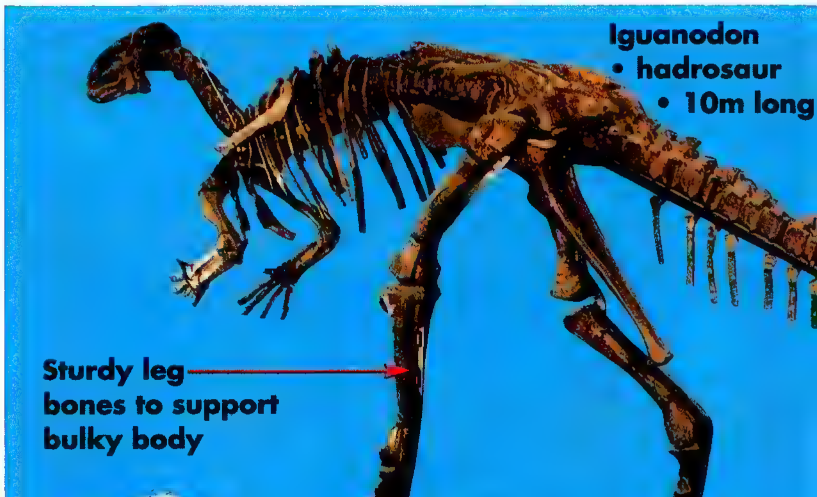
Some skeletons are not complete when they are found. This *Shunosaurus* is missing the club on the end of its tail.

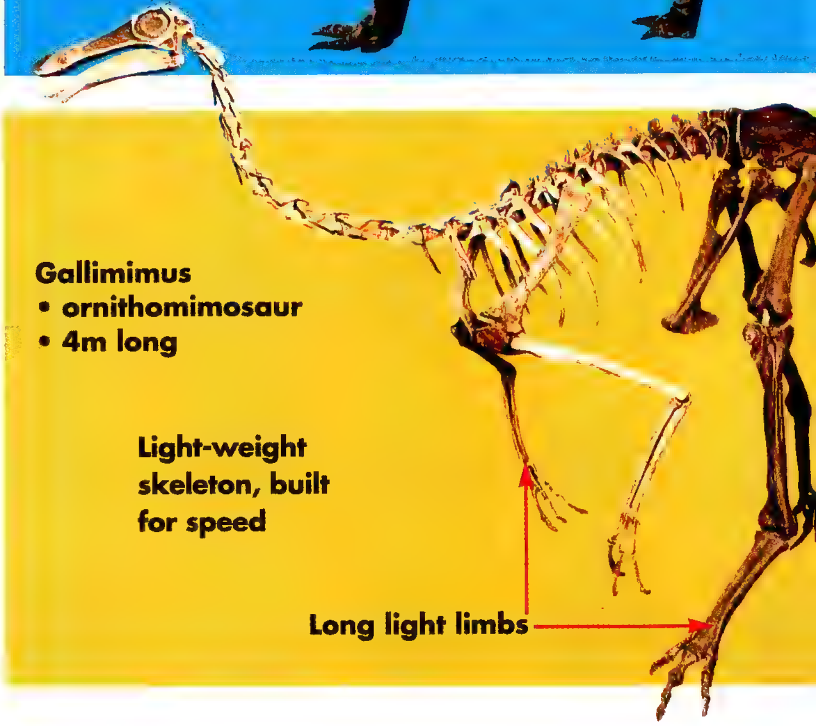




## BLOOD FROM A BONE

Some dinosaur bones had a soft centre of marrow. We have marrow in our bones, too. Marrow makes new blood for the body and did the same in dinosaur bones.





# The egg-eaters

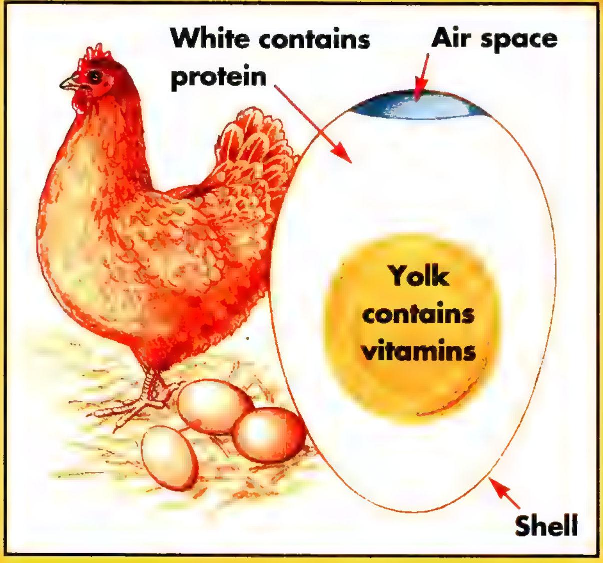
**Dinosaurs did not always have to kill to eat. Some ate dead animals they found. Others stole their food.**

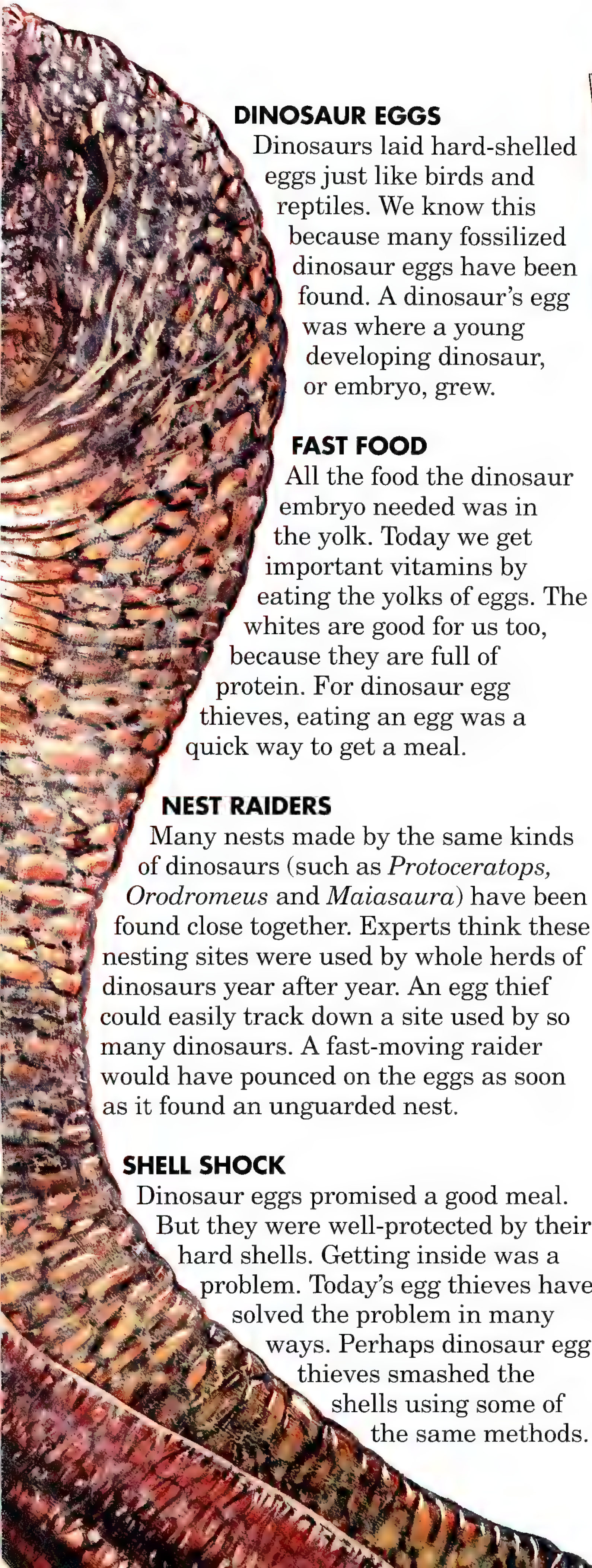
Dinosaurs stole eggs to eat. And they stole them from the nests of other dinosaurs. Eggs were a good choice of food because an egg is almost a complete meal in itself.

*Gallimimus* breaks into an instant lunch of dinosaur egg. Its strong beak was perfect for cracking the shell.

## WHAT'S IN AN EGG?

Dinosaur eggs were not very different from the hens' eggs we enjoy today. They were much bigger, of course. The largest was about 10 times bigger than a hen's egg. But inside they were very similar. And just as good to eat.





## DINOSAUR EGGS

Dinosaurs laid hard-shelled eggs just like birds and reptiles. We know this because many fossilized dinosaur eggs have been found. A dinosaur's egg was where a young developing dinosaur, or embryo, grew.

## FAST FOOD

All the food the dinosaur embryo needed was in the yolk. Today we get important vitamins by eating the yolks of eggs. The whites are good for us too, because they are full of protein. For dinosaur egg thieves, eating an egg was a quick way to get a meal.

## NEST RAIDERS

Many nests made by the same kinds of dinosaurs (such as *Protoceratops*, *Orodromeus* and *Maiasaura*) have been found close together. Experts think these nesting sites were used by whole herds of dinosaurs year after year. An egg thief could easily track down a site used by so many dinosaurs. A fast-moving raider would have pounced on the eggs as soon as it found an unguarded nest.

## SHELL SHOCK

Dinosaur eggs promised a good meal. But they were well-protected by their hard shells. Getting inside was a problem. Today's egg thieves have solved the problem in many ways. Perhaps dinosaur egg thieves smashed the shells using some of the same methods.

**Today's mongoose (left) steals and eats birds' eggs.**

**You can see the bulge of the egg this snake has swallowed in its body.**

## JAWS

One of the strangest of today's snakes lives on birds' eggs. The egg-eating snake swallows each egg whole. The snake can only do this because it can unhinge its jaw, so that it opens extra wide. Once it has swallowed the egg, it breaks the shell with a special row of rough ridges in its throat. Dinosaur egg thieves used their jaws and teeth to do the same job.

## SMASHING TIME

Mongooses and skunks eat birds' eggs, too. They pick them up and fling them against rocks to crack them. Millions of years ago, dinosaur egg thieves may have used their claws or beaks to crack the shell problem.

## IT'S A FACT

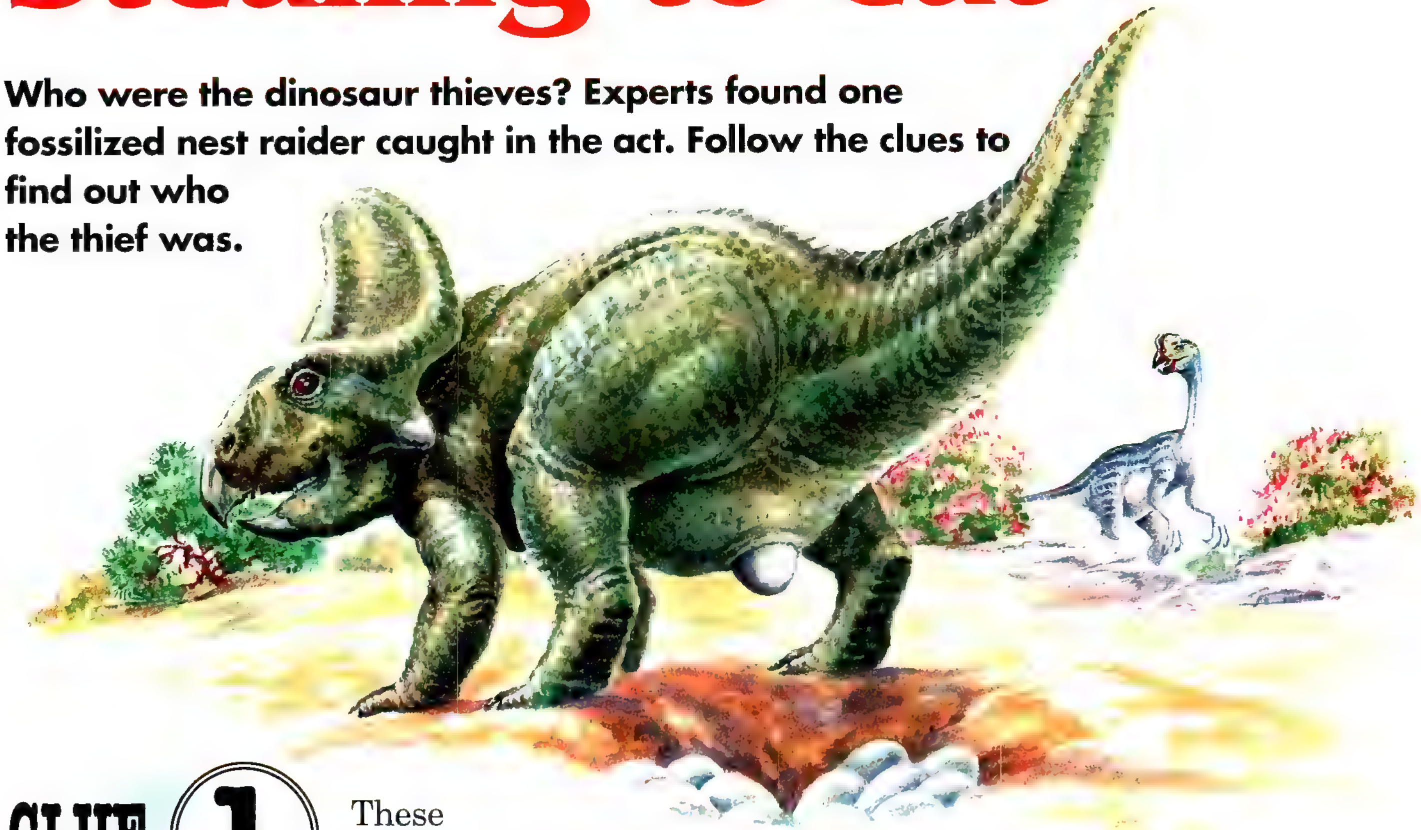
### EGG THIEVES

Experts believe that several dinosaurs stole eggs to eat. Apart from *Gallimimus*, both *Oviraptor* and *Velociraptor* have been branded as egg thieves of the dinosaur world.

**TIME DETECTIVE**

# Stealing to eat

**Who were the dinosaur thieves? Experts found one fossilized nest raider caught in the act. Follow the clues to find out who the thief was.**

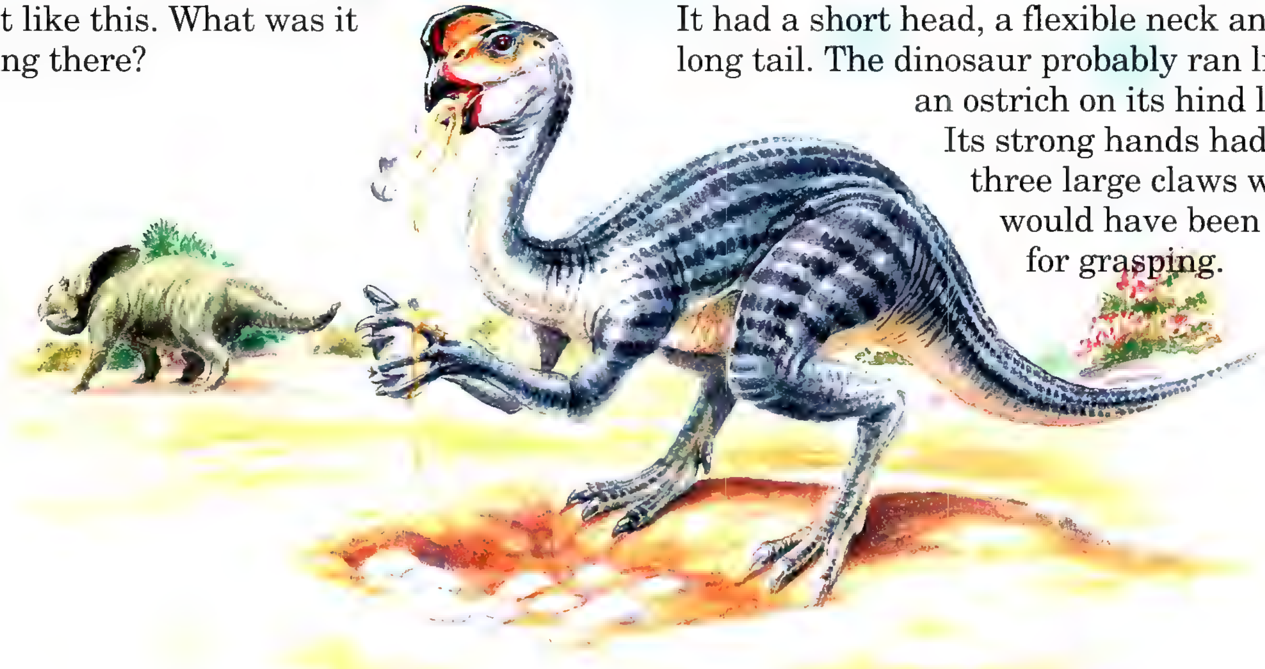


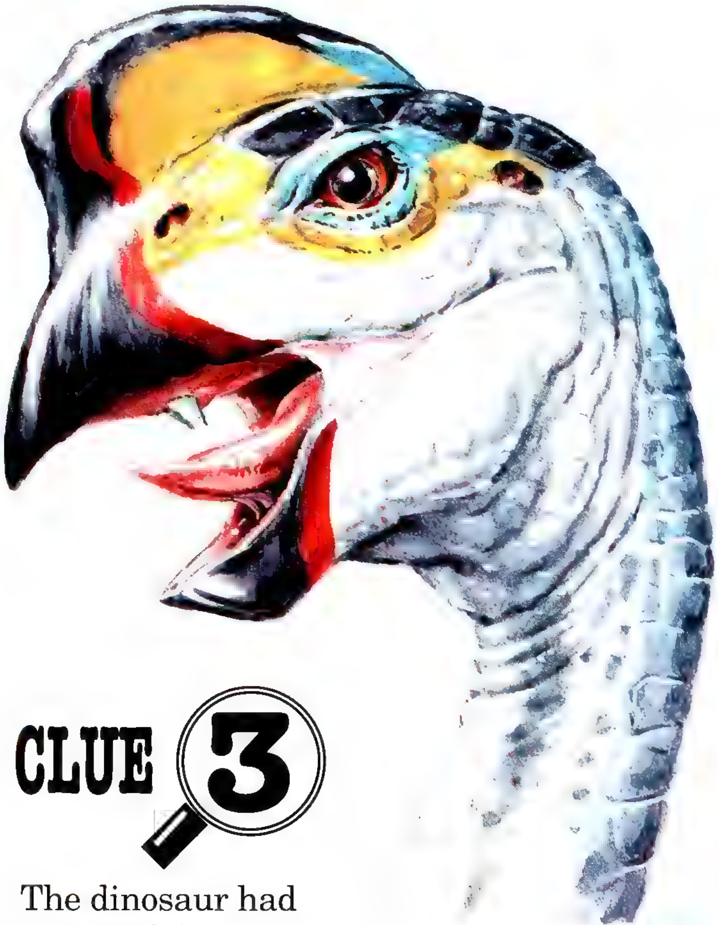
## CLUE 1

These dinosaur eggs were laid by *Protoceratops*. In 1923, scientists were puzzled to discover the skeleton of a different kind of dinosaur lying on top of a nest of eggs just like this. What was it doing there?

## CLUE 2

Experts pieced together the evidence and reconstructed the mystery dinosaur. It was an ostrich dinosaur no longer than a man. It had a short head, a flexible neck and a long tail. The dinosaur probably ran like an ostrich on its hind legs. Its strong hands had three large claws which would have been good for grasping.





## CLUE 3

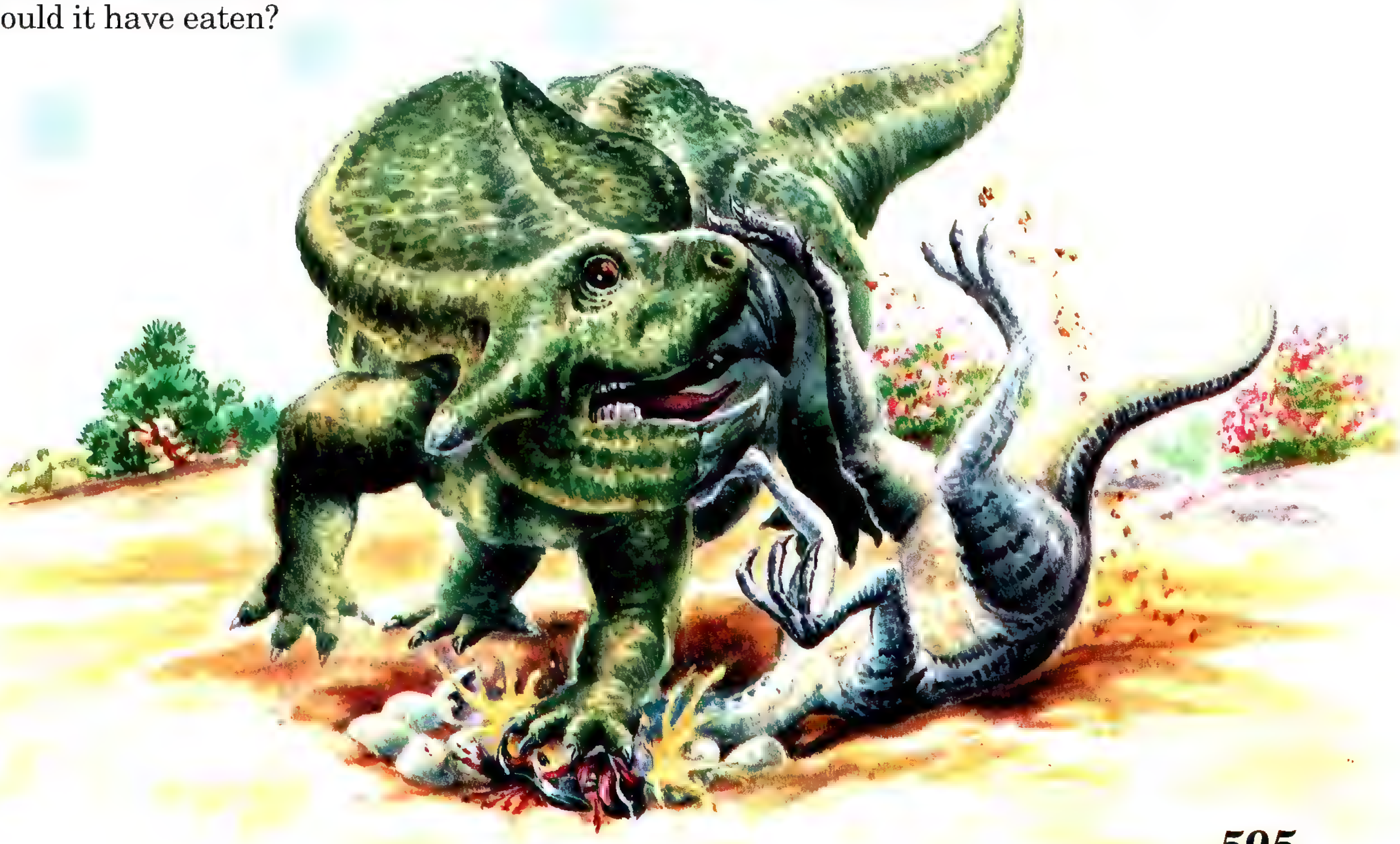
The dinosaur had a powerful, toothless beak. Its jaws were curved so that it could crush very hard objects. Strangest of all, it had two short, sharp prongs in its upper jaw. What sort of food could it have eaten?

## CLUE 4

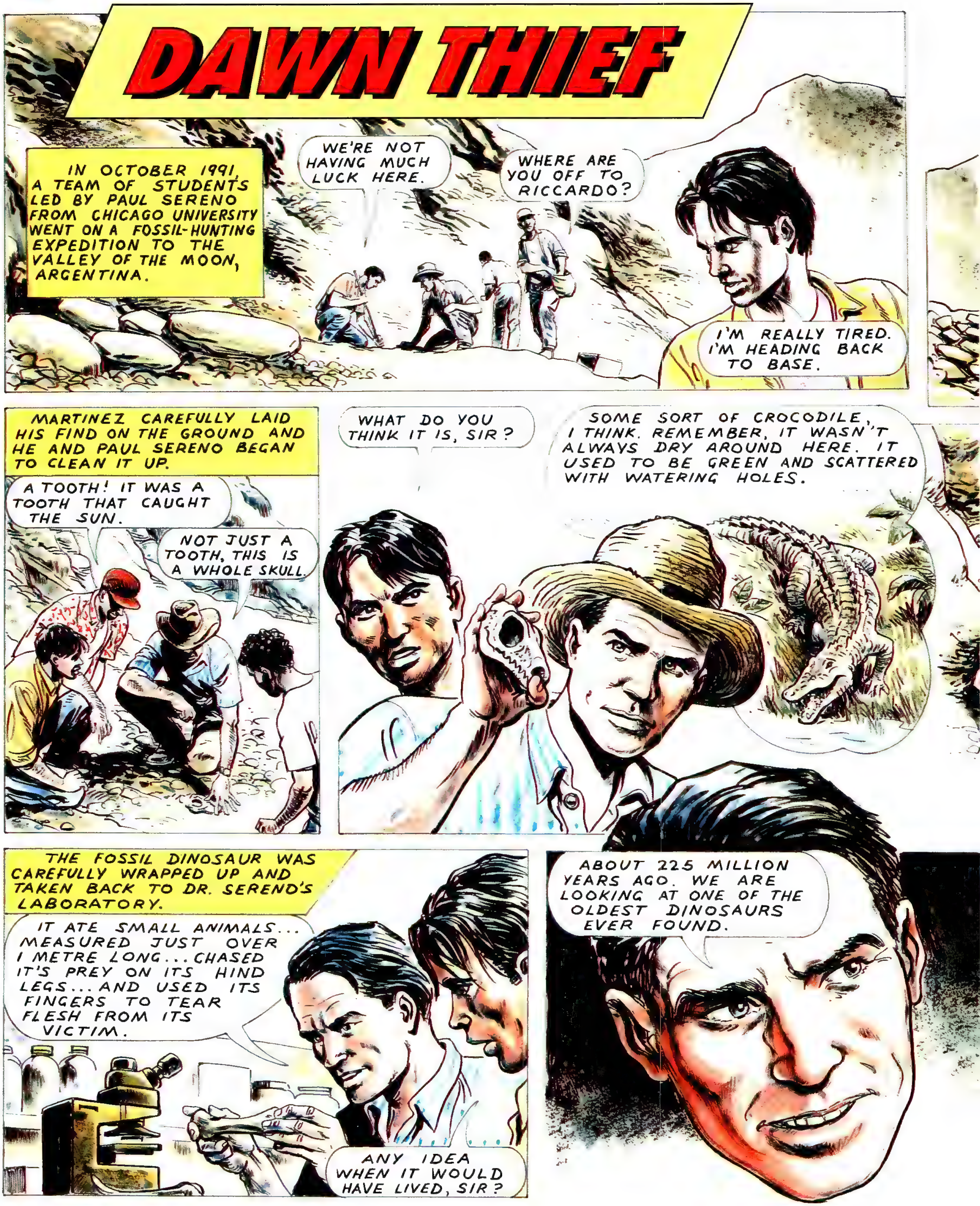
Scientists looked hard at the way its jaws were made and realised they would have been ideal for cracking and eating eggs. Was this the skeleton of an egg-eating dinosaur? The skull was crushed and battered. Why? And why was the skeleton of the dinosaur lying on top of a nest full of *Protoceratops'* eggs?

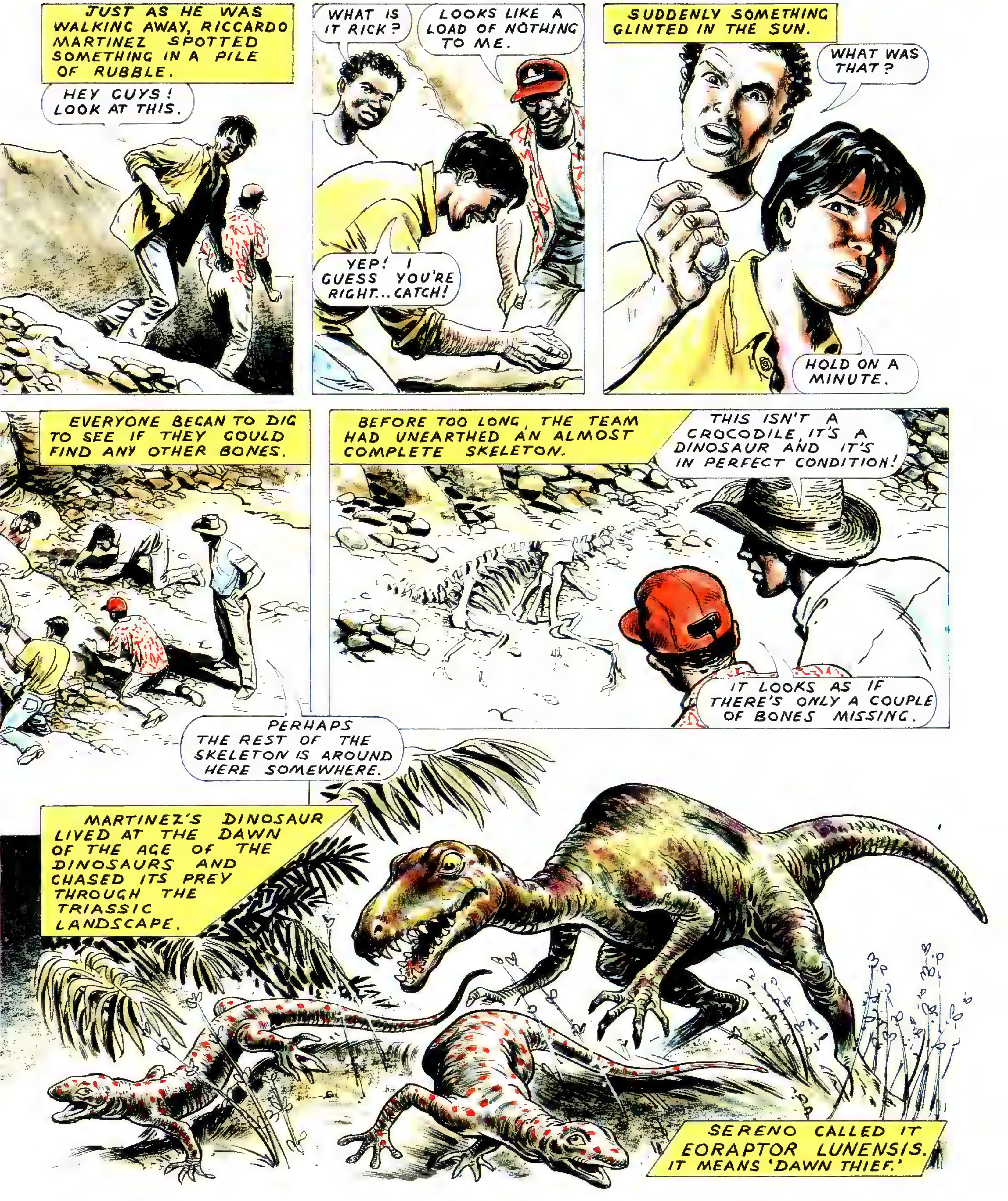
### GOT IT!

The mystery dinosaur must have died while it was trying to steal the eggs. Perhaps it was caught in the act by an angry *Protoceratops* that returned to her nest unexpectedly. She may have attacked and killed the egg thief by crushing its head beneath her foot. The experts decided to call the intruder *Oviraptor*, which means 'egg thief'. *Oviraptor* probably grabbed an egg in its hands, then cracked the shell with one powerful bite, using its fang-like prongs and strong jaws.



# DAWN THIEF


IN OCTOBER 1991, A TEAM OF STUDENT'S LED BY PAUL SERENO FROM CHICAGO UNIVERSITY WENT ON A FOSSIL-HUNTING EXPEDITION TO THE VALLEY OF THE MOON, ARGENTINA.
WE'RE NOT HAVING MUCH LUCK HERE.
WHERE ARE YOU OFF TO RICCARDO?
I'M REALLY TIRED. I'M HEADING BACK TO BASE.
MARTINEZ CAREFULLY LAID HIS FIND ON THE GROUND AND HE AND PAUL SERENO BEGAN TO CLEAN IT UP.
A TOOTH! IT WAS A TOOTH THAT CAUGHT THE SUN.
NOT JUST A TOOTH, THIS IS A WHOLE SKULL.
WHAT DO YOU THINK IT IS, SIR?
SOME SORT OF CROCODILE, I THINK. REMEMBER, IT WASN'T ALWAYS DRY AROUND HERE. IT USED TO BE GREEN AND SCATTERED WITH WATERING HOLES.
THE FOSSIL DINOSAUR WAS CAREFULLY WRAPPED UP AND TAKEN BACK TO DR. SERENO'S LABORATORY.
IT ATE SMALL ANIMALS... MEASURED JUST OVER 1 METRE LONG... CHASED IT'S PREY ON ITS HIND LEGS... AND USED ITS FINGERS TO TEAR FLESH FROM ITS VICTIM.
ANY IDEA WHEN IT WOULD HAVE LIVED, SIR?
ABOUT 225 MILLION YEARS AGO. WE ARE LOOKING AT ONE OF THE OLDEST DINOSAURS EVER FOUND.


JUST AS HE WAS WALKING AWAY, RICCARDO MARTINEZ SPOTTED SOMETHING IN A PILE OF RUBBLE.
HEY GUYS! LOOK AT THIS.
WHAT IS IT RICK?
LOOKS LIKE A LOAD OF NOTHING TO ME.
YEP! I GUESS YOU'RE RIGHT... CATCH!
SUDDENLY SOMETHING GLINTED IN THE SUN.
WHAT WAS THAT?
HOLD ON A MINUTE.
EVERYONE BEGAN TO DIG TO SEE IF THEY COULD FIND ANY OTHER BONES.
PERHAPS THE REST OF THE SKELETON IS AROUND HERE SOMEWHERE.
BEFORE TOO LONG, THE TEAM HAD UNEARTHED AN ALMOST COMPLETE SKELETON.
THIS ISN'T A CROCODILE, IT'S A DINOSAUR AND IT'S IN PERFECT CONDITION!
IT LOOKS AS IF THERE'S ONLY A COUPLE OF BONES MISSING.
MARTINEZ'S DINOSAUR LIVED AT THE DAWN OF THE AGE OF THE DINOSAURS AND CHASED ITS PREY THROUGH THE TRIASSIC LANDSCAPE.
SERENO CALLED IT EORAPTOR LUNENSIS. IT MEANS 'DAWN THIEF.'

Improve and test your knowledge with...

# DINO Fact File

Climb down *Diplodocus*' neck answering the questions as you go.

**3** *Yaverlandia* was as long as:
a) a tennis court
b) a tennis net
c) a tennis racket

**4** *Labocania*'s name means:
a) 'long back'
b) 'big head'
c) 'having red lips'

**5** Martinez and his team discovered:
a) a crocodile
b) a meat-eating dinosaur
c) a pterosaur

**6** What can't a skeleton tell us about a dinosaur?
a) what it ate
b) how it walked
c) what colour it was

**7** What are the holes in a dinosaur's skull called?
a) gaps
b) doors
c) windows

**8** Who discovered the first Antarctic dinosaur?
a) Jerry Hooker
b) Captain Hook
c) Hook James

**9** Compared to a hen's egg, the biggest dinosaur egg was:
a) 10 times bigger
b) 50 times bigger
c) four times bigger

**10** Which egg-eating dinosaur was found on top of *Protoceratops*' nest?
a) *Oviraptor*
b) *Brachiosaurus*
c) *T rex*

## Down-under dinosaurs

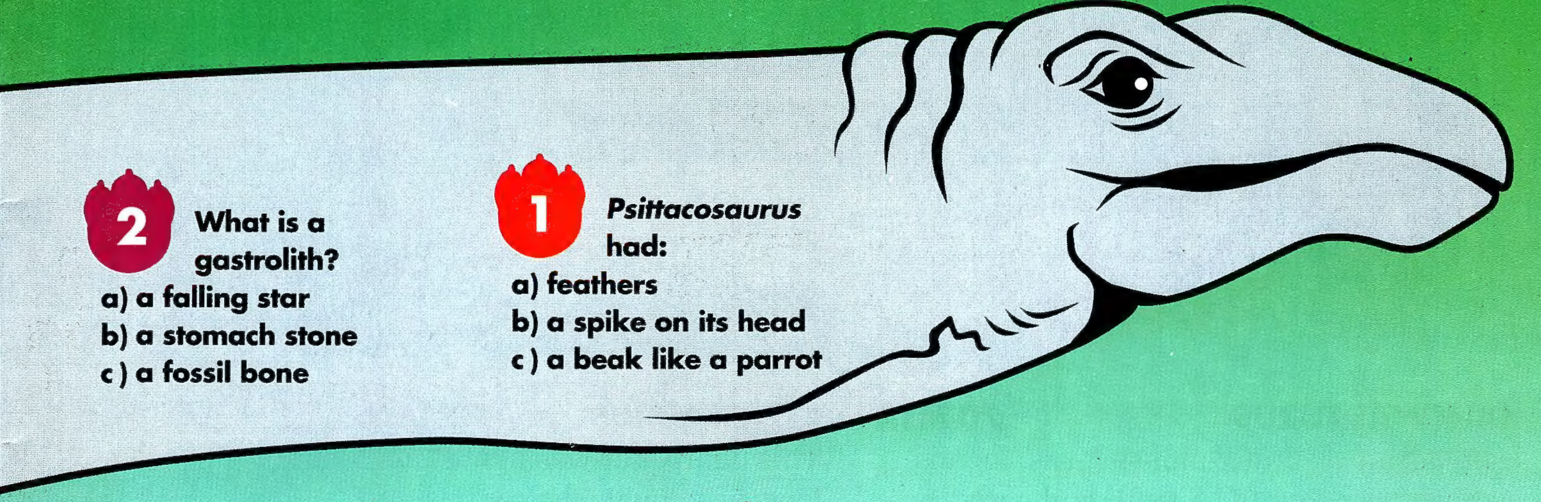
Although Australia is 24 times bigger than Britain, very few dinosaurs have been discovered there. This does not mean that dinosaurs were rare in that part of the world. In northern Australia, footprints of 130 stampeding dinosaurs have been found – evidence that there are many more dinosaurs yet to be discovered.

## Look-a-likes

Take a Compsognathus, put feathers on it, and you could almost believe it's a primitive bird! A fossil found in 1951 was thought to be the smallest dinosaur, Compsognathus. It took scientists another 20 years to discover that it was, in fact, the skeleton of the prehistoric bird Archaeopteryx.

## Surviving the 20th century

Not all dinosaur bones survive the 20th century. After lasting over 70 million years in the Earth's crust, the stegosaur Kentrosaurus (dug up in the early 1900s) was almost completely destroyed during the Second World War when a bomb hit Humboldt University in Germany.



**1** *Psittacosaurus* had:
- a) feathers
- b) a spike on its head
- c) a beak like a parrot

**2** What is a gastrolith?
- a) a falling star
- b) a stomach stone
- c) a fossil bone

## Dinosaur jigsaw

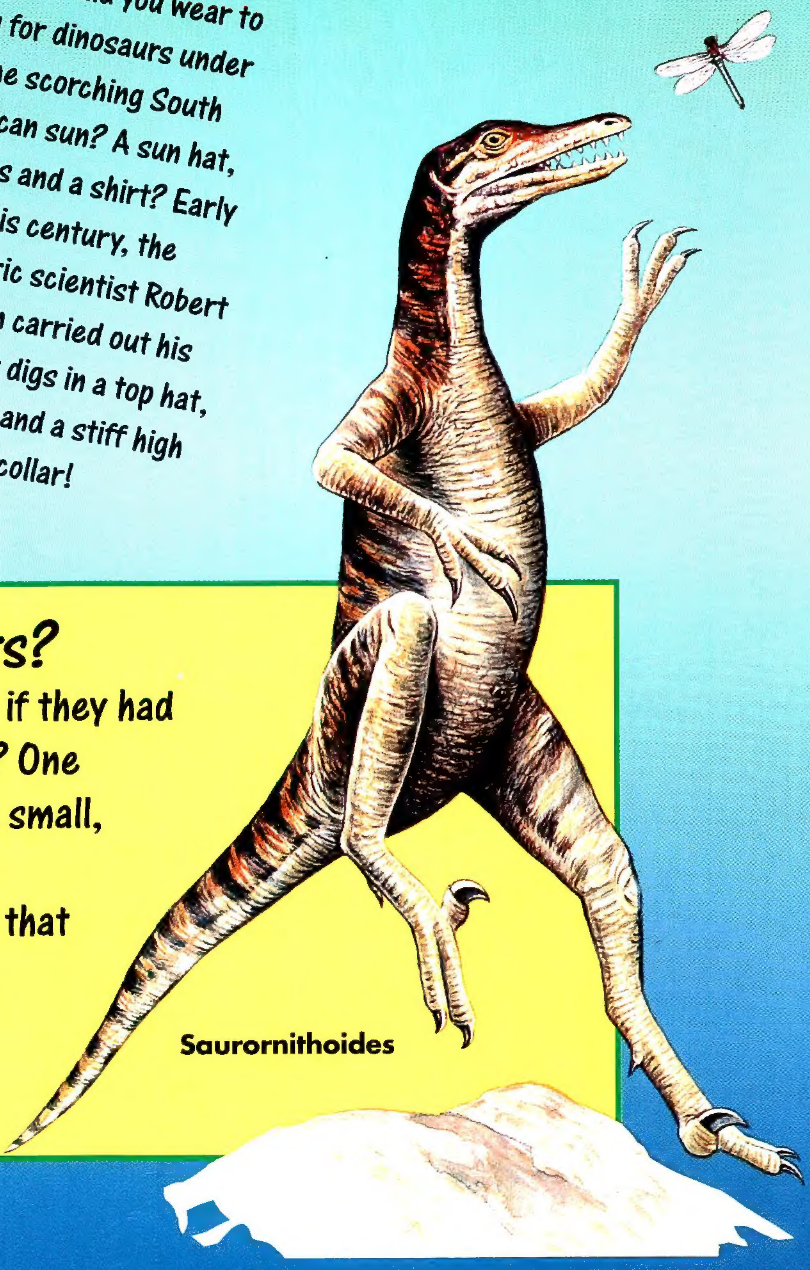
When you visit a museum, you will probably see a perfect dinosaur skeleton. But when fossil skeletons are first discovered, the bones are often crushed, broken and even scattered. Some bones are missing completely. It takes experts years of hard work to make them ready for display in a museum.

## Digging in style

What would you wear to dig for dinosaurs under the scorching South African sun? A sun hat, shorts and a shirt? Early this century, the eccentric scientist Robert Broom carried out his dinosaur digs in a top hat, tailcoat and a stiff high collar!

## Human dinosaurs?

What would dinosaurs look like if they had survived to the present day? One palaeontologist suggested that a small, bird-like dinosaur similar to Saurornithoides, was so intelligent that it could have evolved into a human-like form if it had survived.



**Saurornithoides**

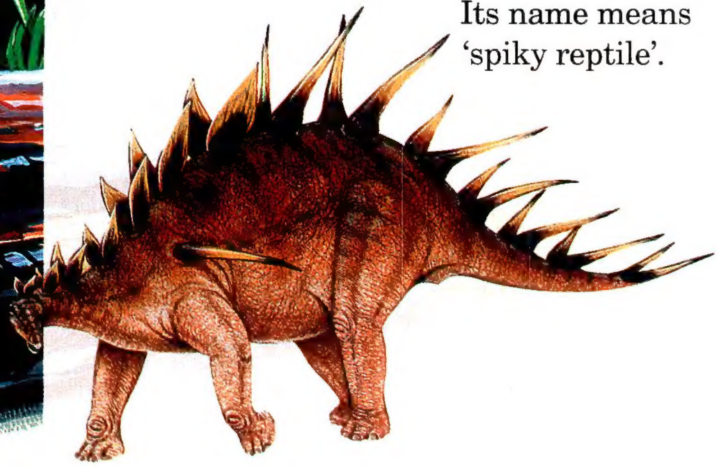
Answers to the questions on inside back cover

**KANGNASAURUS** **70 MYA**

*Kangnasaurus* (kang-nah-saw-rus) means 'very slender reptile'. A tooth and parts of the skeleton of this plant-eating dinosaur were found in Namaqualand, South Africa. *Kangnasaurus* was quite a small dinosaur and it walked on two strong legs with its tail held out stiffly for balance. It lived during the Late Cretaceous Period.

**KENTROSAURUS** **150 MYA**

*Kentrosaurus* (ken-tro-saw-rus) was about the same length as a small car and about 1m high. It carried its head close to the ground and grazed on low-growing plants. *Kentrosaurus* walked on four sturdy legs. This small relative of *Stegosaurus* was only about 1m high. It protected itself with a double row of pointed spikes along its back. On the back of its neck, the spikes were quite flat. Further down its back and on its tail, they became narrower and more pointed. *Kentrosaurus* was found in Tanzania, east Africa, by a team of German palaeontologists. Its name means 'spiky reptile'.



**MYA = MILLION YEARS AGO**

**KRITOSAURUS** **75 MYA**

This hadrosaur was almost as long as a double-decker bus and weighed as much as two rhinoceroses. *Kritosaurus* (crit-oh-saw-rus) lived in the Late Cretaceous Period in Alberta, Canada and New Mexico, USA.

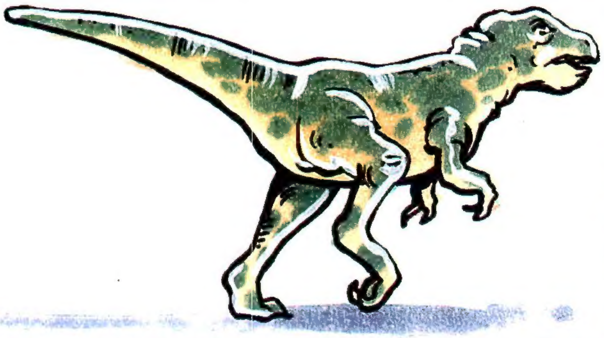
**KUNMINGOSAURUS** **180 MYA**

*Kunmingosaurus* (koon-min-goh-saw-rus) means 'Kunming reptile'. Its remains were found in Yunnan, China and it was given its name in 1986. *Kunmingosaurus* had a long neck and tail. It walked on four legs and cropped plants with spoon-shaped teeth.

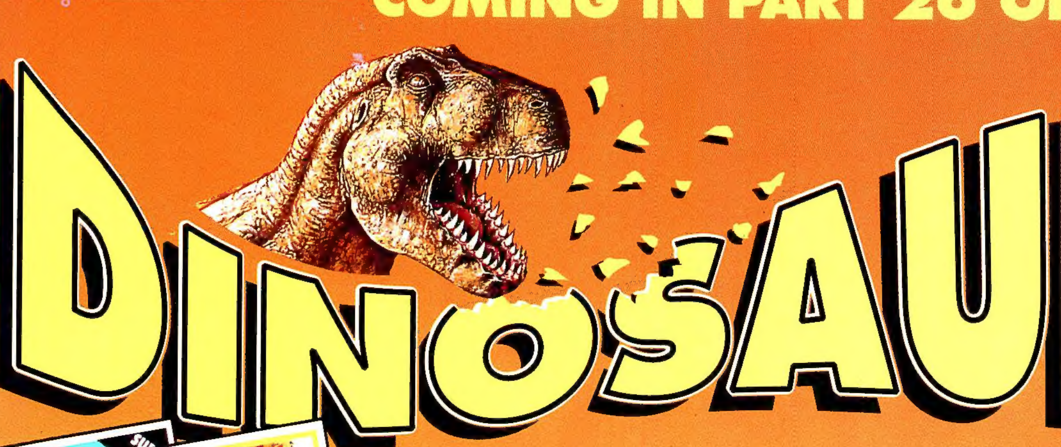
## L

**LABOCANIA** **80 MYA**

In some ways *Labocania* (lah-boh-kane-ee-a) was very similar to famous *Tyrannosaurus rex*. It walked on two legs and preyed on other dinosaurs. *Labocania* was about as long as an elephant and had a massive head. Its name means 'La Bocana' (having red lips). *Labocania* was found in Baja California in Mexico.



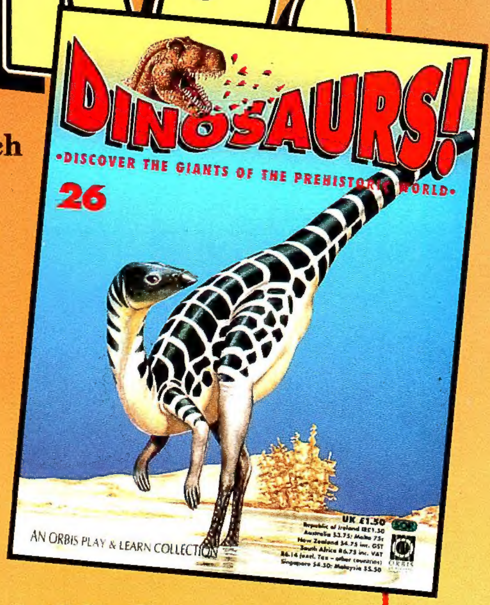
## COMING IN PART 26 OF



THE DINOSAURS!
SWAP IT!
SERIES 1
COLLECTION

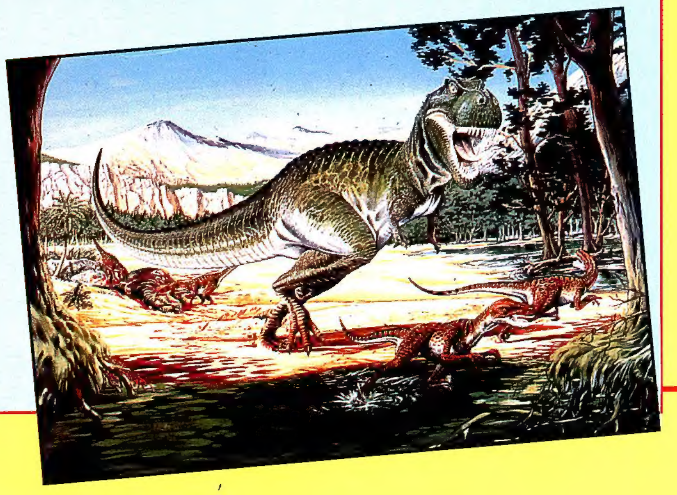
**Boost Your Collection With Another FREE Pack Of Cards**

**Find out which dinosaurs could survive bone-chilling temperatures and weeks of winter darkness in the Arctic in DINOSAUR WORLD.**
**Plus, how to rebuild a dinosaur skeleton in TIME DETECTIVE.**


DINOSAURS!
•DISCOVER THE GIANTS OF THE PREHISTORIC WORLD•
26
AN ORBIS PLAY & LEARN COLLECTION
UK £1.50

## THE DINOSAURS! POSTER COLLECTION

Have you ever wanted to fill your room with dinosaurs? Now you have your chance – with the *Dinosaurs!* POSTER COLLECTION. Each poster is a 820 x 570mm (nearly eight times the size of this page) and features a superb dinosaur artwork. You'll find facts and figures about the dinosaur on the back – PLUS a look at some other prehistoric animals. The eighth poster is *T rex*.



## DINOSAURS! binders

**Keep your copies safe and neat with these fantastic binders.**

Your binders have been designed to look good at home or at school. Each is sturdy and hardwearing – it even has a wipe-clean cover – and holds 13 issues.You'll want to use your DINOSAURS! collection again and again – for reference, for school projects, or just for fun. So don't let your copies go missing; keep them in your own set of binders.

**DINOSAURS! binders are now available and cost just £4.95 (including £1 p&p). Please refer to the information on the inside front cover or telephone 0424 755755 for details.**

**ANSWERS TO DINO FACT FILE QUESTIONS: 1.c 2.b 3.c 4.c 5.b 6.c 7.c 8.a 9.a 10.a**

**PICTURE CREDITS:** front cover: Robin Bouttell, Dr P Bengston 583; Field Museum of Natutal History, Chicago neg # GEO 81445: 590 BL; NASA 582 B; Natural History Museum/John Sibbick 577; Natural History Museum 578 T, 579 B, 590 C, 590/1 T, 591 TR, CR, BR; NHPA 579 TL, 584/5, 593 BR,TR; David Norman 579 TR, 591 CL. **Artworks:** Fred Anderson 600 TR; Black Hat 581 TR, 600 BR; Graham Berry 599; Robin Bouttell 594/5; Barry Croucher 581 B; Mike Dorey 596/7; Andrew Farmer 582 BL, 582/3, 583 B; Wayne Ford 586/7; Ryz Hajdul 584/5; Grisewood and Dempsey/Kevin Maddison 578 BL;, 580 TR; Dierdre McHale: back cover; John Parsons 580 B, Pinsharpe 3D Graphics 588/9; Graham Rosewarne 600 BL; Rosie Sawyer 592 BL; Brain Williamson 592/3. 3-D Gallery: models of the Carnegie Collection provided by Safari Ltd (foreground) and the Natural History Museum, London (background).

**Dr. David Norman of Cambridge University answers your dinosaur questions**

# ASK THE EXPERT

## How did dinosaurs keep cool in summer?

Some dinosaurs, such as the stegosaurs, had bony plates down their backs which they could have used to radiate heat and cool themselves. Other dinosaurs may have used different methods. One very common method was to shunt hot blood from the skin on their backs where it is exposed to the sun, around to the skin of their bellies, where it was shaded and cool. Many modern reptiles are able to do this. Other dinosaurs could have used parts of their bodies, such as their long necks and legs and tails, as radiators to lose heat in a breeze, or in the shade of a tree.

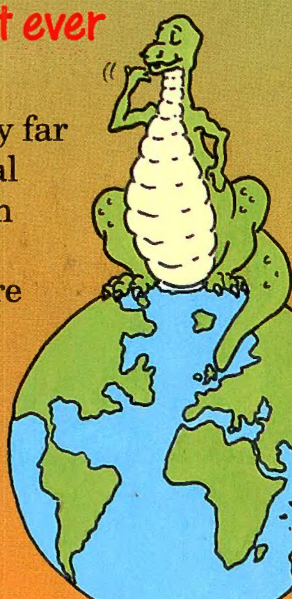
## Did dinosaurs have wrinkles?

Yes, they probably did! Dinosaur skin was scaly and similar to that of reptiles. And just like modern reptiles the skin was quite loose-fitting in places, so it seems very likely that dinosaurs were quite wrinkly.

## Did dinosaurs make nests?

We are not sure whether all dinosaurs made nests. Some dinosaurs, such as *Maiasaura*, are known to have constructed very elaborate nests which looked like mini volcanoes lined with vegetation. Others may have made simple scrapes in the ground, or, like *Troodon*, may have simply laid their eggs in small clusters on the ground and just left them to hatch out.

## Were the dinosaurs the biggest animals that ever lived on Earth?



No! The blue whale is by far the most gigantic animal ever to have lived. It can weigh up to 100 tonnes. However, dinosaurs were certainly the biggest animals ever to have lived on land. There were some very large mammals in previous ages – huge elephants (mammoths) and giant rhinoceroses, but even these were dwarfed by the really big dinosaurs.

25
5 018132 312057